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LECTURE.

*ON THE EFFECTS OF INFLUENZA UPON THE HEART AND
CIRCULATION: THEIR CLINICAL MANIFESTA-
TIONS AND THEIR TREATMENT.¹*

*THE HUNTERIAN LECTURE DELIVERED BEFORE THE HUN-
TERIAN SOCIETY, ON OCTOBER 11, 1899.*

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MR. PRESIDENT AND GENTLEMEN:

In the first place, I thank you very heartily for the honor you have done me in inviting me to deliver this lecture. I am sure that I address a sympathetic audience, and I will say no more on this point, for if you know what I mean, it matters little what I say.

I have chosen a subject which I think no one can hesitate to believe to be one of practical interest and importance. Since the later months of 1859 we have had influenza with us, and there have been for us frequent opportunities of observing the pernicious features of the disease—the acute symptoms of infection and reinfection, and the multiple and varied phenomena showing the involvement of various structures of the body, sometimes in close, at other times in remote, time-relations with the signs indicating the original invasion.

It cannot be held that science has spoken her last word concerning the malady, and the experience of every member of the medical confraternity may add some facts or observations which can modify our views and add to our stock of knowledge.

¹ From the author's manuscript furnished the INTERNATIONAL MEDICAL MAGAZINE.

On this particular occasion I propose to treat the subject from the point of view of my own personal observation, and in a manner differing from that which I have most frequently adopted. I intend, for the purposes of condensation and brevity, to adopt the didactic rather than the argumentative method. If I show myself dogmatic, kindly remember that I fully recognize the possible fallacies of any dogmata. I will not repeat the oft-cited lines; I am aware that this is an occasion on which I cannot be corrected at the moment; but I do know that it is open to all to bring their own knowledge in the future to annihilate or to correct these utterances. If any one has obtained by precise investigation a knowledge which culminates in more correct conclusions, I am sure that he will find many opportunities of practically displaying it. Only if the deductions I have made from my own observations are fortified by the lessons of your own and others' experience, I ask you to accept and employ them with me.

I have usually presented the investigations I have made in the form of clinical studies. In framing these I have followed the rule, than which I think there could not be a better, displayed before our eyes in the words of Morgagni, every week when we open our copy of the *Lancet*: "There is no other way of obtaining a precise knowledge on the matters which concern the practice of our profession than that of assembling together the records of cases of disease and of scientific investigations with regard to their morbid anatomy and all that pertains thereto—the observations of others as well as the personal investigations of one's self—and then of comparing these together and learning the lessons of their numerous and varied associations." In these days the results of the labors of coworkers are presented in a large mass of printed matter of the greatest interest and importance.

I hope I have never been unmindful of the value of these records. I have endeavored to assimilate them. Since I have had what I consider to be a sufficient field for clinical observation, I have chiefly relied as a basis for my conclusions on the histories and phenomena of cases which I have personally observed. I have compared my deductions with those of others and, where there has been any difference of opinion, I have given my conclusions without fear and without a desire for favor. This is the plan I have always adopted, and the one I always intend to adopt, though I cannot commend it as calculated to induce an invariable peace of mind.

I think I may accept it as a premise, that it is a matter of common experience to a medical practitioner to have a patient come to him with symptoms indicating a disturbance of the ordinary comfortable working of the heart, such disturbance having a time-relation with an attack of influenza. My problems are: How shall we classify these cases? What are the causes, ultimate and proximate, of the morbid phenomena? How ought we to treat them? Before we come directly to our subject, a review of the evidence concerning the primal cause of the disease is necessary.

PRELIMINARY CONSIDERATION—BACTERIOLOGY.

There can be no doubt that influenza is a disease of infection and, as in the case of all other infectious diseases, due to a micro-organism. I take it as proven that the special micro-organism is the bacillus described by R. Pfeiffer in 1892,² and I have little to add to the description of it so graphically recorded by Sir T. Grainger Stewart in his address to the British Medical Association in 1894.³ As Pfeiffer originally held, the bacillus is found only in cases of influenza, and is especially discoverable in the sputa. It is difficult to obtain a pure culture. The bacilli may be cultivated in agar, but more readily if blood be mixed with the agar. Pigeon's blood bouillon was found to be a satisfactory medium by Delius and Kolbe. Pfeiffer recognized the great difficulty of the necessary proof of the bacillus being the true and only agent because of the then impossibility of producing the disease by the inoculation of animals. Most animals are immune, but Cantani's experiments,⁴ recorded in 1896, are of the highest importance in this regard. Cantani injected pure cultures under the dura mater of rabbits and thus produced the characteristic symptoms of the disease. In eight to ten hours temperature began to rise, the maximum fever being attained in from six to twelve hours; then there was a rapid fall to the normal, and death took place by collapse in from eighteen to thirty-six hours after the injection. Together with the rise of temperature were progressive dyspnea, paralysis of the extremities beginning with the hind legs, chronic spasms, and then heart failure. In non-lethal doses chronic meningitis was set up, from which there might be recovery. The *post-mortem* examinations in the fatal cases showed enlargement of the spleen, congestion of the liver with commencing fatty degeneration, a hemorrhagic exudate in the peritoneum, and, in some cases, inflammation of the kidneys.

It has been affirmed that the micro-organisms of influenza can be demonstrated in the blood. This assertion was made by Canon in 1893. Such demonstration, however, must be possible very exceptionally. The presence of the micro-organism in the blood has been denied by all subsequent observers working with improved methods and with greater knowledge of Pfeiffer's bacillus. Yet I have not infrequently found in medical literature that the micro-organism of influenza has been termed the Canon-Pfeiffer bacillus. It is time that a very doubtful doctrine should be discarded, and that the term Pfeiffer's bacillus should be retained. "The influenza poison," says my colleague, Dr. Bullock, Bacteriologist of the London Hospital, to whom I am indebted for much aid in these and other bacteriologic investigations, "belongs to the group of the bacterial *proteins* (Buchner), *i. e.*,

² Pfeiffer: *Die Aetiologie der Influenza. Zeits. für Hygiène*, 1892, XIII.; *Vorläufige Mittheilungen über die Erreger der Influenza. Deutsche med. Woch.*, 1892, No. 2; Pfeiffer und Beck. *Weitere Mittheilungen über die Erreger der Influenza. Deutsche med. Woch.*, 1892, No. 21.

³ Stewart, Sir T. Grainger: *Address in Medicine*, B. M. J., August 4, 1894, p. 242.

⁴ Cantani: *Wirkung der Influenza bacilli auf des Central nervus System. Zeits. für Hygiène* 1896, XXIII., p. 265.

poisons which occur in the *bodies* of the organisms, and are not excreted (or only to a limited extent) into the media in which they grow (like diphtheria and tetanus bacilli). The toxin of influenza acts on the central nervous system powerfully. Locally, of course, the effects are exerted mostly on the respiratory system." "It has always seemed to me," says Dr. Bullock, "that the closest parallel exists between influenza and gonorrhea in this way. Both influenza and gonococcus spread along a mucous surface; in the one case the respiratory, in the other the urethral; neither penetrates to any depth. Both are intensely parasitic, and are confined to man. Both are difficult to cultivate. Both produce poisons which, of course, are qualitatively entirely different—the influenza protein or poison acting much more specifically on the nervous system than the gonotoxin. Neither organism enters the blood, except with very rare exceptions (gonorrheal endocarditis and other forms of metastatic gonorrhea, etc.). In fact, the influenza poison which is absorbed into the system acts *par excellence* on the nervous system, as has been clearly shown by Cantani's experiments."

MIXED INFECTION.

It was found very early in the bacteriologic investigation of influenza that the microbe of Pfeiffer was very frequently associated with other micro-organisms. The commonest association was with the pyogenic cocci and the pneumococcus. The cultivation of the bacilli of influenza in the presence of other microbes, especially staphylococci, has been experimentally studied by Grassberger.⁵ In the cases of otitis media and inflammation of the membranes of the brain, which are undoubtedly found to be correlated with influenza, the intimate concurrence of the proper microbe of influenza with staphylococci, streptococci, pneumococci, has been abundantly demonstrated. In the pneumonia of influenza it has been shown that in some cases only the microbes of Pfeiffer can be found; in others, these are associated with the pneumococcus (*bacillus lanceolatus*); most commonly of all there are found the influenza bacilli and streptococci together. An intimate association with tubercle bacilli has been observed in some cases. Dr. Wynekoop, of Chicago, found, in several instances, the diphtheria bacillus and the influenza bacillus in the throats of patients, and the clinical symptoms usually suggested the bacteriologic findings. Influenza bacilli were not only found in cases of diphtheria, but also in scarlet fever, measles and pneumonia. In all these it was noticed that there were clinical manifestations which were difficult to interpret until the microscopic examination for the bacilli had been made.⁶ These mixed infections go far to explain the variations of symptoms; the resulting toxins produce varied morbid effects.

⁵ Grassberger: *Beiträge zur Bacteriologie der Influenza. Zeits. für Hygiene*, 1897, XXV., p. 458.

⁶ Wynekoop: Report of Department of Health, City of Chicago, January, 1899.

CLINICAL EVIDENCE OF MIXED INFECTIONS.

I have observed five cases in which there was good evidence that influenza and typhoid fever were running their course concurrently. Two of these were fatal from heart failure. In another case there was a most serious relapse, but ultimate recovery. In the others, recovery took place without complications. In patients who have been the subjects of various forms of malarial fever, I have observed symptoms which have seemed to me to denote a marked reaction with the influenza toxin. I shall have occasion to revert to this point later on. In patients with limited consolidations in the upper lobes of the lungs, the diagnosis has often been beset with difficulty. In some cases the fires of tuberculosis have been quickly kindled, and the progress of the disease to a fatal issue has been appallingly rapid. In others, repeated examinations of the sputa have failed to demonstrate the bacillus tuberculosis, and, though condensations in the apices have given constant fear of the existence of phthisis, the disease, though it has had a protracted course over many months, has eventuated in recovery. It is not my purpose here to consider the clinical aspects of the many forms of influenza-pneumonia; it is sufficient to say that, in some cases, the symptoms have been manifested for many months—even more than twelve months.

CLINICAL EVIDENCE OF THE REACTIONS OF THE INFECTIVE AGENCY OF INFLUENZA IN CERTAIN MORBID STATES.

I have observed a considerable number of cases of gout and gouty manifestations in which there has been a course of severe or of peculiar and perplexing symptoms after an attack or after repeated attacks of influenza. I shall return to this point when I come to consider the irregular heart after influenza. I shall only observe that it seems probable that influenza tends to adversely modify the perverted metabolism in the goutily disposed. In the cases of acute rheumatism a superadded influenza infection, I feel sure, imports grave dangers. I have observed several cases of rheumatic heart disease—pericarditis, endocarditis, or both combined, obviously in direct association with rheumatism—where infection with influenza has produced a most serious aggravation of the signs and symptoms. One such case under my observation was rapidly fatal from heart failure. On the other hand, I have never had before me trustworthy evidence to show that any ordinary form of endocarditis is brought about by influenza alone. Cases of pericarditis and endocarditis have been noted by several observers as occurring from this disease, but, considering the vast number of cases under observation, the correlation must be taken as rare. Althaus states⁷ that in the German army, where 55,263 men suffered from influenza, six cases of pericarditis and four of endocarditis only were noticed. One of these was undoubtedly septicemic, with infective “ulcerative” endocarditis. Parvinski

⁷ Althaus: “Influenza.” London: Longmans & Co., 1892, p. 255.

noted endocarditis following influenza chiefly in persons who had already been subject to heart disease previously to the influenzal infection. The cases which he describes as benign seem to me to be those in which the influenza produced cardiac symptoms temporarily aggravating those of the pre-existing rheumatic lesion, and those described as malignant have the features of ulcerative endocarditis. In a remarkable case sent under my care at the London Hospital by my friend, Dr. Daly, well-marked exophthalmic goiter immediately followed an attack of influenza. There was also valvular disease of the heart (mitral insufficiency). The symptoms of infective (ulcerative) endocarditis followed, and the patient died. At the autopsy well-marked ulcerative endocarditis was found. It might appear at first sight that the influenza infection had initiated all the morbid phenomena. There had been, however, otitis media with suppuration. Undoubtedly the pus-forming organisms were present. The infection, therefore, was not a simple infection by the influenza bacillus, but a mixed infection with the pus-forming cocci, which we know to be capable of inducing ulcerative endocarditis. I have quite recently observed the case of a lady, aged thirty-five, in whom, directly after an attack of influenza, there occurred symptoms of ulcerative endocarditis. There had been an old valvular lesion, and not only so, but the development of a loud systolic murmur over the aorta, especially at the back in the left intrascapular region, made it probable to my mind that an aortitis, such as I shall presently describe as of influenzal origin, had developed. Though influenza may aggravate, and often does aggravate, the dangers of a pre-existing rheumatic heart disease, I am of opinion that it never produces any disease of the heart even remotely resembling the rheumatic.

I am myself convinced that the arthritis, which in some cases accompanies and in others follows influenza, is a simulated and not a real rheumatism. I have had opportunities of observing many cases in which the early symptoms of fever, attended with pains and swellings of many of the joints, were so closely like those of acute rheumatism that the diagnosis was extremely difficult. The influenza infection was, however, distinctly traced, and in none were there affections of the heart and pericardium of the rheumatic form. In other cases the arthritis followed influenza.

I acknowledge that the relations between influenza and rheumatism, or simulated rheumatism, are, in some instances, extremely puzzling, and I think misleading. Previously to 1896 I had observed a series of cases in which fever, with sweatings accompanied by pain and swellings of the joints, became manifested in a way that made the diagnosis of rheumatic fever almost certain. There were, however, no rheumatic associations, but decided evidence of the probability of the infection of influenza. In another series of cases, also in close relation (or in more remote time-relation) with influenza, there were severe and protracted pains in many joints in a manner that suggested to me an acute form of osteoarthritis,

I was very anxious to get the criticism of my brethren on the views which I expressed in relation to these cases, and I embodied the histories and deductions in a paper which I submitted to one of our chief medical societies. The paper was returned to me by the council, and I was denied the privilege which I sought of obtaining confirmation or demolition of my conclusions. The paper is published under the title of "Influenza Arthritis" in the *Medical Press and Circular* of June 3, 1896.⁸ Subsequent experience has confirmed these views. In some cases, the initial symptoms of influenza closely resemble those of acute rheumatism—there is an extremely painful polyarthritis with fever and sweatings, but these are no more of the nature of rheumatism than are the forms of arthritis which attended cerebro-spinal meningitis or dengue fever. To call these painful affections of the joints which attended the developments of an acute disease of the nervous elements rheumatism, would be nothing but an abuse of terms. The more protracted form of severe arthritis, which sometimes is manifested in the early stages of influenza, but is more frequently met with some months after the attacks, is of the nature of osteoarthritis and has not the association of true rheumatism.

I think it of the highest practical importance that we should differentiate true rheumatism from its many counterfeits. It may seem paradoxical to say that rheumatism is not a painful disease. Our patients, for the most part, think that all painful affections are rheumatic. Yet the painful arthritis of true rheumatism is only a very small part of the morbid process. It may be insignificant; it may be even entirely absent. Morbid changes affecting the endocardium and the heart structures may occur in the fetus in utero without the mother participating in the disease. In the child, the affections of the joints in rheumatism are often very trivial, and in the adult, though there may be frequent repetitions, the pains in the joints do not last many days and are usually readily controlled by salicin or the salicylates. The rheumatic affections of the heart, however, have a very protracted course and are often strangely symptomless. Clinical observation and morbid anatomy concur to show that all the main structures of the heart may be involved and oftentimes permanently altered by disease of rheumatic origin. Pericarditis, in some cases, passes away, but in many ends in permanent adhesions and consecutive change in the heart muscle. Endocarditis goes through changes (alternation of endothelium and formation of vegetations, exudations and thickenings, fibrosis and contractions, calcareous deformity and degenerations), lasting, in many cases, for many months or many years; but is unattended by symptoms to mark the course and nature of the morbid changes. The muscle of the heart, the myocardium, may also be profoundly affected, temporarily or permanently, by the

⁸ "Influenzal Arthritis." *Med. Press & Circ.*, June 3, 1896, p. 569; "The Nature of True Rheumatism," *Clin. Jour.*, December 7, 1892, p. 81; "Non-Rheumatic Arthritis and Some of its Associations," *Int. Clin.*, 1893, I., p. 58; "The Treatment of Rheumatism," *ibid.*, 1894, I., p. 1; "Complicated Rheumatism," *ibid.*, 1895, I., p. 19.

rheumatic process. The whole heart may be thus involved—the general “carditis” of Sturges—or there may be varying enlargements of all the structures of the heart, conditions so well studied by Drs. Lees and Poynton. These all constitute well-defined morbid conditions, phases of the rheumatic heart. The varieties of the truly rheumatic diseases of the heart may, I think, conveniently be considered in two categories—the violent and explosive, and the slow and insidious. In the former the attendant signs of arthritis—the *ensemble* or rheumatic fever—are usually present and the disease is acute and severe. If there be endocarditis, this results in course of time in thickening and crumpling of the mitral curtain and the induction of the condition of mitral insufficiency. In the latter, the course of disease within the heart is slow, and often unattended with obvious symptoms, the mitral orifice becomes narrowed by degrees and there is the affection known as mitral stenosis. Of course, there would be no proof of the rheumatic origin of this variety of disease, if it were not that in some of the cases there occur obvious signs of rheumatism, and at any autopsy the morbid appearances are exactly those of rheumatic endocarditis.

Arthritis in a rheumatic subject, of course, is strong *prima facie* evidence of any structural disease of the heart associated therewith being of rheumatic origin, but it should be borne in mind that all arthritis is not rheumatic arthritis. The forms of non-rheumatic arthritis are multiple and varied. Inflammation of the joints may occur in relation with mumps, with enteric fever, with dysentery, and with certain acute diseases of the nervous system. I have omitted mention of scarlatinal arthritis, for this is considered by many not strictly of the rheumatic form. There is very strong ground for belief that the severe and violent arthritic disease known as rheumatic gout, arthritic deformans, osteoarthritis, etc., has no essential relation whatever with rheumatism.

In all forms of non-rheumatic arthritis, symptoms of cardiac disturbance are frequently complained of by the patients. I have noted that the subjects of the rapid heart and palpitations and of the irregular heart are, in large proportion, the subjects of rheumatic gout. My own observations, clinical and in the field of morbid anatomy, show that there is no endocarditis in these cases, no structural heart disease, unless it be dilatation of the heart. The probable pathogenesis and the clinical features of such dilatation I shall touch upon subsequently. I need only say now that, in my opinion, the heart affections which are in association with true rheumatism differ “*toto coelo*” from those which are met with in the subjects of osteoarthritis. In the former, there is well-defined organic diseases; in the latter, disturbances of the nervous mechanism. But in both classes of cases modifying circumstances have to be considered. In the truly rheumatic class, nervous perturbations can be epiphenomena, and, in the class of cases essentially non-rheumatic, there may be engrafts upon a pre-existing rheumatism. So also between the truly rheumatic arthritis and the non-

rheumatic arthritis, which has essentially in its origin nothing to do with rheumatism—there is a class of cases which I have described as *complicated rheumatism*. There are cases in which a tendency to osteoarthritis (rheumatic gout) complicates a pre-existing rheumatism causing the involvement of joints (especially the small joints of the hands and fingers), which usually escape in true rheumatism, an extension of the involvement of the structures of the joints and a great protraction and aggravation of the sufferings. In true rheumatism, the pathologic process in the joints is but an exudation from the congested synovial membranes, usually absorbed in a few days; in osteoarthritis, all the structures of the joint—bones, cartilages, fibrous structures and synovia—are intensely inflamed, hypertrophy and atrophy, hyperemia and degeneration go on together. There is a sort of mania of the joint or joints. The rheumatic heart is in a state of permanent disease or of long continued liability to organic disease—the non-rheumatic heart of arthritis is affected with, or liable to, disorders of its nervous mechanism and, in a minority of cases, to degenerations and alterations of its muscles but not to essential organic disease of endocardium, pericardium or myocardium. If I am permitted to express, without argument, my views as to the prime factors in these cases, I would say that true rheumatism is a disease in which, whatever its “*primum agens*” the pathology is essentially humoral, with long-lasting effects upon serous membranes; whilst osteoarthritis is probably primarily a disease of the nervous system causing violent perturbations in the nutritive processes of the joints. This tendency to a ready development of arthritic disturbances or a violent commotion, in some cases, is the result of a toxin operating upon a certain part of the cerebro-spinal nervous mechanism at any age. The influenza toxin is very potent to produce it. If occurring in a rheumatic subject or in a gouty subject, it greatly aggravates the susceptibilities to the cognate symptoms of these diseases. The tendency on the part of the individual which may render him a so-called arthritic or may induce what our continental brethren term “arthritism,” is essentially a morbid condition of the central nervous system, which may or may not be correlated with rheumatism or with gout. I hope that these expressions of mine will not be put down as mere guesses—baseless, formless and visionary. I devoted my clinical lectures at the London Hospital during two years to a review of cases under my own observation of true rheumatism and of simulated rheumatism. My first lecture on the criteria of true rheumatism was printed in the *Clinical Journal* of December 7, 1892; some of the succeeding lectures on non-rheumatic arthritis and some of its associations, on the treatment of rheumatism, and on complicated rheumatism, were printed in the *International Clinics* for 1893, 1894 and 1895.

EFFECTS OF INFLUENZA UPON THE NERVOUS SYSTEM.

Sir Thomas Grainger Stewart said, in his address in 1894, that in in-

fluenza the nervous system suffered the most frequently. He mentioned the well-marked peripheral neuritis affecting the hands and feet which he had observed, the impairment of the integrity of the cord and brain, the meningitis, the congestive and inflammatory changes in the medulla, the pons, and other parts and the mental aberrations ranging from mere lowness of spirits to the most pronounced and dangerous melancholia or other serious forms of insanity.³ Dr. Althaus, who made a very careful and elaborate study of the extant evidence concerning the disease, in 1892, published a most valuable bibliography containing all the important observations of continental as well as English contributors and gave a long record of affections of the nervous system, including post-influenzal psychosis, post-influenzal diseases of the brain and its membranes, diseases of the spinal cord and its membranes, diseases of the peripheral nerves, diseases of the sympathetic system of nerves and general neuroses.⁷

Post-mortem investigations have shown local hyperemia of brain and membranes, hemorrhages, exudations (serous in some cases, purulent in others), and, in some instances, disorganizations and degenerations of the nerve-cells and fibers. Mackay⁸ found in a case of cervical meningo-myelitis initiated by influenza, swelling of the cord in the cervical region, congestion and thickening of the membranes, adhesions of the dura mater and thick fibrinous exudations. The cord in the affected area was soft and pulpy and, at one part, completely disintegrated. The nerve trunks in the left side appeared wasted. In a case recorded by Ferguson in which there had been agonizing abdominal pain during convalescence from influenza, it is said that the nerves and ganglia throughout the abdomen were found to be inflamed and there was marked degeneration in some of the nerve tissues.⁹ The effects of the experimental inoculation of the influenza-microbes in inducing inflammatory and destructive changes in the nerve cells and fibers I have already noted.

Amongst the cases under my own observation, have been peripheral neuritis (in one case affecting both legs and inducing complete paraplegia, which recovered), and in another brachial neuritis, followed by wasting of muscles. In many typical examples there was recovery without wasting—neuritis involving branches of the fifth nerve, evidenced by intense neuralgia, cerebro-spinal meningitis; one case recovered, another was fatal, a case which seemed to be a mixed one of peripheral neuritis with anterior poliomyelitis with much resulting deformity. Many cases of diseases of the spinal cord (some of which are published in the *Liverpool Medico-Chirurgical Journal*, 1895), also very marked cerebro-spinal disseminated sclerosis, and a large number of cases in which the functions of the brain were disturbed in minor degree, to say nothing of a large number of "mental" cases—psychoses.

³ Mackay: "Cervical Meningo-myelitis Following Influenza," *Lancet*, August 1, 1891; "Clinical and Pathological Observations on Nervous Diseases." Bristol: John Wright & Co., 1894, pp. 3-11.

There can be no doubt that the well-defined diseases and disorganizations of the nervous elements are due to the toxin of influenza.

Seeing that in some cases the organic disease in certain areas of the nervous system, central and peripheral, is manifested in the early stages of the disease, and in others not until long periods (often many months) after apparent convalescence, it would seem that the toxin is evolved in some cases early, and that, in others, the microbes may be long latent before maturing their poison. It might seem possible, inasmuch as the painful and obvious experiences of diseases are repeated at intervals and may even be periodic—when there was no evidence of reinfection that there may be periods of quiescence alternating with outbursts of the toxin; but this hypothesis is not necessary, for the initial effect may be a disintegration of some of the nerve elements in certain areas leaving these in an imperfect condition—a state of irritable weakness—competent at some periods to fulfil their functions and at others incompetent. The process of healing, of complete restitution, may be, and often is, very slow.

I propose now to revert to my original plan and present a summary of the teachings of my own personal observations of cases in which the functions of the circulatory mechanism have been impaired in close, or in more remote but causal, relation with influenza. I shall classify these under the symptom which was the dominant one in the various cases under observation. In a paper communicated to the Medico-Chirurgical Society, June 12, 1874, I gave a resumé of 100 cases in which these were thus classified: Morbid acceleration of the heart's contractions (tachycardia), 37 cases; irregularity of the heart, 25 cases; abnormal retardation, 5 cases; pain at the heart, 23 cases; organic disease of heart, 5 cases. I do not intend to give statistics on this occasion. I have had a large series of cases under observation since, but I think that the above fairly and generally represents the relative frequency of the morbid symptoms manifested.

THE EFFECT OF INFLUENZA IN INDUCING THE CONDITION OF RAPID HEART.

An abnormal excitation of the heart's contractions occurs as a very frequent, perhaps the most frequent, sequel of influenza. The morbid acceleration (tachycardia) may be persistent for long periods, or may be intermittent and accompanied by the other symptoms of palpitation. In some cases it occurs with, or immediately after, the initial feverish signs of influenza infection; in others, it begins to be manifested some weeks or months after the original attack. In the communication mentioned, the cases of morbid acceleration of the heart cited included only those in which the observed rate was 100 or over per minute—this rate persisting for long periods. If we include cases of intermittent acceleration, the number observed would be at least trebled. In the cases of persistently rapid heart the majority evidenced little or no discomfort. In one-fourth of the cases, the already rapid heart was accompanied by further accelerations, with dis-

comfort at intervals. It seemed strange that, in the case of a patient whose heart was beating so much in excess of its usual frequency, there should be so little subjective discomfort. This is, however, quite in accord with our experience of essential tachycardia in general—a person whose heart is beating 120 times a minute or more may be going about his usual avocations, and may say that he is quite well. The vasomotor tone of the arteries seems unaltered, the quickened action causes an increase of the tension within the artery, but the volume is reduced; the pulse is narrow, but the arterial wall is not thickened. The arterial wall becomes relaxed and the pulse dicrotic only when there are painful palpitations or feverish attacks.

In other cases are observed the phenomena so frequently associated with Graves's disease—palpitation, flutterings, flushings, perspirations, faintness, and tremors. In a large number there were explosive attacks often occurring at night—paroxysmal dyspepsia with flatulence, nausea, gastralgia and diarrhea, associated in some cases with dyspnea, or with short, quick breathing, tachypnea, and a sense of failing heart. These attacks I have termed "vagus storms"; they seem to involve all the tracts supplied by the pneumogastric nerve, but in some cases one area disproportionately to the others.⁸ They are often accompanied by headache or interchanged with attacks of migraine.

RELATION WITH CARDIAC DILATATION.

I have no evidence that there is in these cases any association with structural disease of the heart other than dilatation of its muscular walls; and I found that such dilatation is comparatively rare. There is no relation whatever between the rate of acceleration or the degree of perturbation of the heart and the evidence of such dilatation. In most of the cases of long-continued acceleration of the heart's action, when the rate was observed on all occasions to be 120 or more, the outline of the heart as determined by physical examination was not enlarged; in fact in some cases it seemed smaller than the normal; on the other hand, in some cases where the heart rate was only slightly accelerated and not many symptoms were complained of, there was undoubted evidence of enlargement. I think I observed this enlargement more in males than in females. In the very pronounced cases where all the signs of Graves's disease concurred, the heart was usually small, rather than large. I am sure that in some cases the dilatation is temporary, and, taking the evidence from all sides, I am convinced that the dilatation in these cases is primarily due to an affection of the nervous mechanism—probably a special involvement of some part of the vagus roots and not to a primary disease of the muscle fiber. In a very small minority of cases, a permanent enfeeblement of the myocardium may ensue and the dilatation be more lasting. I have had under observation a few cases in which an acute dilatation of the heart occurred in a manner which con-

vinced me that a nervous lesion was the immediate cause; in fact there were the associated signs of a neuritis of the vagus. For instance, in a man aged forty, an alcoholic, who had an acute febrile disease, no doubt an influenzal infection, the heart became extremely dilated, the pulse rate went up to 200, and there was great dyspnea. The physical signs showed that the extreme dilatation receded day by day till the thirteenth day of observation, when it was apparently normal. The rate of the pulse dropped from 200 day by day until on the sixth day it was 80, and afterwards 72 and 56. In this case I think an alcoholic neuritis was reinforced by influenzal infection. I have observed similar heart symptoms in some cases of influenzal disease of the spinal cord.

THE EYELID AND GLOBE SIGNS.

I draw attention to them, not only because I think that they are important for diagnosis and clinically useful during the observation of the cases, but also because they afford important evidence as to the nervous origin of the disease and of the locality of the areas implicated. The signs, some of which are observed in a majority of the cases of paroxysmal post-influenzal tachycardia, are (1) retraction of the upper eyelids toward or under the margins of the orbits (Dalrymple's sign, often in error called Stelwag's sign). The presence of this sign gives the eyes a peculiar staring appearance; (2) a well-marked tremor of both upper and lower eyelids when the patient endeavors to gently close them. This is manifested in the early stages of recovery; it precedes the stage of tonic retraction. (3) The well-known von Graefe's sign, in which the upper eyelid does not follow the downward movement of the globe but, remaining near the orbit, causes the appearance of a white band of sclerotic above the iris. (4) A disturbance of the normal balance of the muscles in the two orbits so that one eye appears to be on a lower level than the other (Dixōn Mann's sign). (5) The well-known prominence of the globes exophthalmos. That these signs, or some of them, are so frequently observed in influenzal cases of tachycardia goes far, I think, to prove that the origin of the affection is not in the heart nor its ganglia, but in the central nervous system. I believe, with Mr. Arthur Maude, that the lid symptoms mentioned are due to changes in the oculo-motor nuclei causing a paresis of the orbicularis and upper facial muscles which are innervated by fibers derived from the oculo-motor nuclei and passing down to the trunk of the seventh nerve by the posterior longitudinal bundles. Thus the levator palpebræ, insufficiently antagonized, draws the eyelids upward, the normal correlation of the eyelid with the muscles of the globe is disturbed, and the enfeebled condition of the orbicularis is in some cases manifested in tremor; and, when want of support of the globe is still more marked, the eyeball protrudes. In some cases it has been shown that the paresis in Graves's disease involves the third nerve, for ophthalmoplegia has been noted in a few cases.

TREATMENT OF THE RAPID HEART OF INFLUENZA.

In the first place, I think one should acknowledge failures. I do not know of any drug treatment that can be relied upon to reduce the abnormal rapidity of the heart's action. Digitalis and all such cardiac tonics fail completely. The only condition in this category in which it is useful is where there is a cardiac dilatation which lasts some weeks, for in the acute forms of dilatation it is inert or harmful. Then it should, I think, be given in full doses—10 to 20 minims of the tincture or half a dram of the infusion, or one grain of the powdered leaves three times a day for three days, with intervals of three or more days in which the drug is withheld; or the alkaloid digitalin, 2 to 4 granules of Nativelle's, each containing one-tenth of a milligram of the crystallized digitalin, may be administered once in the twenty-four hours for two days consecutively, with interval of at least three days. Or a hypodermic injection of a solution of two of the gelatin discs, Savory and Moore's, containing $\frac{1}{100}$ grain of digitalin each, may be made daily for not more than three consecutive days. The intermittent administration of digitalis or digitalin is, I think, much to be preferred to the continuous.

No drug, I think, should be continuously administered which tends to increase the intra-arterial tension or to excite the heart. Iron preparations are generally ill borne. Small doses of arsenic, 3 to 5 minims of Fowler's solution well diluted, administered three times a day, constitute the best tonic treatment. Alcohol, in forms and doses that quicken the already excited heart, is generally to be avoided. At any rate, champagne and Burgundy, I feel sure, do much harm; whilst Bordeaux claret, and the still Moselles are permissible. A simple diet, of which milk is a considerable item, is the best.

The only treatment of the persistently rapid heart which has reasonable probability of success is, in my opinion, the administration of weak continuous galvanic currents through the course of the pneumogastric nerves, as recommended by the late Mr. Cardew. The current should be of 2 to 4 milliamperes (from 6 to 10 of Schall's cells), the anode well moistened being applied to the nape of the neck, and the cathode, also moistened, in the groove in the neck between the sterno-mastoid muscle and the thyroid cartilage. The administration should be for six minutes, three times a day, the course of the right and the left pneumogastric being treated on alternate occasions. Any good influence from the treatment is manifested very slowly. Improvement rarely begins until the treatment has been pursued for six months, but the recoveries which I have witnessed, have been very satisfactory.

In the cases accompanied by any or all the signs of Graves's disease, I have found treatment by thyroid gland, thymus gland or suprarenal capsules (or any preparations of them) quite useless. Yet, in the minority of cases in which there was decided enlargement of the thyroid, the application of

ice-bags over the swollen gland or the frequent sponging with cold sea-salt-water appeared to be followed by much benefit. I can find time on this occasion only to very briefly advert to the treatment of the cases of paroxysmal tachycardia and of palpitations occurring with vagus storms. The one chief indication is to train the patient into conditions of comfort. For the insomnia which occurs in a large proportion of the cases, I think the best treatment is a nightly draught containing 20 to 30 grains of sodium bromid, together with a cachet containing 10 grains of chloralamid. A second dose of 10 grains of chloralamid may be given during the night if sleeplessness persists. In some cases trional agrees better than the chloralamid. It is best to avoid preparations of opium or morphia, but sleep must be procured by these in some cases for limited periods.

For the treatment of the cases accompanied by dyspepsia, I think the alkaline carbonates are the most useful. In the cases of paroxysmal palpitation or heart discomfort or of any form of vagus storm, the patient should be provided with an agent which gives comfort at the very beginning of an attack, at the slightest warning that a paroxysm is impending. In many cases I have found nothing better, certainly nothing so innocuous, as phenacetin. I generally prescribe a wafer cachet containing 8 grains of phenacetin and one of camphor. This is to be swallowed after having been moistened by a mouthful of water, directly discomfort is experienced. If the symptoms are unrelieved in half an hour or an hour, a second cachet is to be taken.

In some cases antipyrin in fifteen-grain doses, dissolved in water, is more effectual than phenacetin. If either of these drugs control the symptoms, there is a good moral effect upon the patient. He feels that he has a trustworthy remedy at hand, and he succeeds in reducing an intolerable discomfort, in course of time, to reasonable comfort.

THE IRREGULAR HEART OF INFLUENZA.

I think it must be regarded as a matter of common experience that irregularity of the action of the heart is observed very frequently in patients after an attack of influenza. I gave an analysis of thirty such cases in a paper read at the meeting of the British Medical Association in Bristol in 1894.¹⁰ I have had opportunities of observing a large number of cases subsequently. One important and, it might seem, unexpected lesson enforced by a study of these cases is that there is no sort of proportion between the degree of irregularity of the heart and the subjective suffering of the patient. There may be an extreme irregularity, the heart running riot as it

¹⁰ "Notes of Three Cases of Disease of the Spinal Cord Occurring after Influenza: With Observations." *Liverpool: Med. Chir. Jour.*, January, 1895, p. 118; "Paroxysmal Dyspepsia, etc.," *Int'l. Clin.*, 1897, p. 13; Address on "The Investigation of Some of the Nervous Disorders of the Heart," *Trans. Med. Soc. London*, Vol. XXI.; "The Irregular Heart after Influenza," *B. M. J.*, November 10, 1894, p. 1,042.

were—a "*folie du cœur*," and yet the subject of such cardiac irregularity be wholly unaware of any abnormal action of the heart. On the other hand, a very slight irregularity—a mere occasional intermission—may be attended by extreme distress and precordial anxiety. This fact should, I think, induce us to keep the attention of the patient as much as possible away from the heart. He should not take observations of his pulse, nor fix his attention upon the mode of working of his heart. A patient may be intensely introspective and may even complain of feelings of heart failure when the heart is manifesting a perfectly normal action. Such cases come perilously near mental aberrations; but I think we should endeavor to explain these by physical causes, and, taking as proved that the perturbations of the heart's action after influenza are due to changes in the nerve-elements, to ascribe them not to a disturbance of such functions of the vagus as are concerned, not with the cardiac reflex, but to a disturbance of the nerves which have to do with the sense of well-being of the heart. The prognosis even in the mental disorders due to influenza is more favorable than when such aberrations are due to other unexplained causes. A review of the cases under observation shows most convincingly that there is, in a considerable number of cases, an association with Graves's disease in all its symptoms, or in some of them just as obtains in the cases of rapid heart. In post-influenzal Graves's disease there may be irregularity of the heart instead of rapidity, or as well as rapidity, and I do not think this point has been sufficiently recognized. In certain cases the conditions of irregularity and of rapidity are interchanged; marked tachycardia occurs at one time, marked arrhythmia at another. In a considerable number of the cases of irregularity of the heart after influenza, I have noticed a disturbance of hearing or auditory vertigo, and the removal of the causes of any reflex disturbance of the nasal auditory mechanism has been of advantage in treatment.

The most important association of the post-influenzal irregular heart is with gout and goutiness. In the gouty generally there have been very serious symptoms; in some, repeated attacks of acute nephritis, although not the progressive changes of interstitial nephritis; paroxysmal dyspepsia has been more violent than in the other cases. There have been attacks in which one feature has been the abundant excretion of uric acid in the urine—uric acid storms—and in many the heart symptoms, pain, distress and heart failure have been very severe and, in some, fatal. There are, however, exceptions to the generally grave significance of the heart irregularity in the gouty that have become infected with influenza. In a case which I observed, in which an extreme irregularity was manifested after influenza in a gouty subject, there was a complete absence of suffering or distress, and the patient was quite unaware that the heart's action was other than the normal. I arranged that he should not be informed that there was any irregularity, and in course of time a completely normal action returned.

TREATMENT OF THE IRREGULAR HEART AFTER INFLUENZA.

I have little to add to the lines I have suggested in regard to the rapid heart. The restoration of regularity of action of the heart is even more slow than the restitution in cases of tachycardia; in many cases irregularity persists though the patient returns apparently to normal health. The treatment of the painful manifestations will be touched upon hereafter.

I think the irregular heart is influenced favorably by galvanism in the course of the vagi, just as in the case of the rapid heart. The ruling principle of treatment should be the gradual training of the patient into conditions of comfort and regularity. Some of the medicinal means tending to this end I have already mentioned.

The training of the circulation by physical methods is of high value and importance. Massage, muscular exercises, baths and bathing are agencies of great usefulness, but I cannot discuss these in the limits of this lecture. With these, the abstraction of the patient from home cares and anxieties and the institution of climatic treatment, sea voyages, and means whereby the purest possible supply of fresh air is ensured is now rightly esteemed amongst the most important of therapeutic agencies. So the "cures" elaborated in many of the health resorts of the country and abroad are to be highly appreciated. They are useful for the training of the patient into other and better conditions. I think, however, the patient should be made to understand that the sojourn at any given place is not the be-all and end-all of treatment, but that he should continue to adopt the rational methods of diet, hygiene and training which he has learned, and should not slide back into faulty ways. I most emphatically condemn any method of procedure which brings the varying conditions of his disturbed circulation or disordered heart frequently before the patient's mind—sphygmographic records are valuable in their way, and so are recorded observations of the size and shape of the heart, but if the patient be allowed to study them too often, I think it tends to the induction of unhealthy valetudinarianism. We have plenty of evidence of the sometimes evil influence of mind on the cardiac action. We may obtain one cogent illustration if we turn to any manual of forensic medicine, and read the case of Colonel Townsend, who, by a mental effort, could slow down his heart; he experimented once too often, slowed the heart down to arrest—and died."¹¹

I would also suggest that the records showing the reduction in the precordial dullness, often considered to be crucial evidence of improvement, should not be accepted without much discount. Under any treatment, or under no treatment, there may be variations from day to day, and I am myself convinced that the nervous factor in dilatation of the heart has to be taken strongly into account; and when dilatation of the left ventricle has occurred from organic disease, I am convinced that it is not always a condi-

¹¹ Guy and Ferrier: *Forensic Medicine*, 6th ed. London: Renshaw, 1888, p. 214.

tion to be sorry for—such dilatation may be evidenced when there is complete compensation; for if there be inadequacy of the mitral valve, for example, the left ventricle must have a larger capacity in order to give a due supply to the aorta and just sufficiently supplement the loss due to regurgitation.

POST-INFLUENZAL BRADYCARDIA—THE SLOW HEART AFTER INFLUENZA.

I have had abundant evidence to show that an abnormal retardation of the heart's action may be a sequel of influenza in like manner, though not so frequently, as an abnormal quickening or an irregularity. Such retardation may be paroxysmal or continuous. I have observed the case of a man aged sixty-five, in whom after repeated attacks of influenza the usual pulse of 72 fell to 48 for two to four hours every afternoon for a week. The periods of bradycardia were accompanied by much distress, so that the fairly active man was obliged to lie down until the pulse had regained or had in part regained its normal frequency.

In many other instances of slow pulse after influenza, the retardation has persisted during all the time the case was under observation. These rates per minute have been 56 (three cases), 54, 50, 40, 36, 19. My cases showed that the danger to life in post-influenzal bradycardia was relatively greater than in tachycardia and arrhythmia. In some cases, pain was severe and such pain was generally epigastric, but the chief danger was from syncope, which might occur with no painful manifestations.¹⁰

The treatment in cases of slow heart has less satisfactory results than in the other cases of perturbation of the heart's rhythm. Daily massage of the extremities I think to be of service. It seemed probable that the administration of belladonna, 10 minims of the tincture three times a day, had a favorable effect. At any rate, in one of the cases I have mentioned, the pulse frequency under this treatment rose from 19 to 33, and the patient seemed to have much improved; he died suddenly, however, after he had left the hospital.

PAIN AT THE HEART AFTER INFLUENZA.

In the *Lancet* of January 2, 1892, I gave an analysis of seven cases of severe pain at the heart after attacks of influenza which I had observed. In a communication to the Royal Medical and Chirurgical Society in 1894 I reviewed the evidence in twenty-three other cases. In eight of these thirty cases the pain was paroxysmal, and the attacks closely resembled those of angina-pectoris. The paroxysms of pain were in some cases of extreme intensity. I recorded cases in which complete loss of consciousness attended the paroxysm; a loss of consciousness also occurred in one case where the pain was not intense, only a dead pain over the heart being noted. In several cases there were radiations of pain down the left arm, the neck, and the back, and in some there was the feeling of impending death. It would seem therefore, that the attacks resembled in the closest manner true angina-

pectoris. Yet none of these cases were fatal; I found no signs of abnormally high intra-arterial tension, and, in those persons who manifested the most intense paroxysms, the conditions of the heart both in rhythm and in integrity of structure, so far as could be determined by physical examination, were quite normal. I concluded that the cause of the symptoms was a disorder of the nerves alone or the central nervous system—a form of neuritis or a visceral neuralgia—and not a true angina-pectoris. From the evidence presented, I thought that in similar cases a generally favorable prognosis would be justified. Further experience, however, failed to bear out this satisfactory conclusion, moreover, it went far to indicate the nature of the process by which, in a minority of cases, organic disease of the heart is set up by influenza. I recorded in my article on diseases of the blood-vessels in the *Twentieth Century Practice of Medicine* (Vol. IV., p. 460), the case of a lady who, after a second attack of influenza, manifested intense sternal pain and the aggregate of symptoms of acute aortitis. After great agony for twenty-four hours, the patient died in the night; there was no *post-mortem* examination. A second case of a lady, aged sixty-one, went a more protracted course. After influenza-infection, there was pneumonia, accompanied by intense sternal pain and the development of a systolic murmur at the apex with dilatation of the heart. There was repeated pneumonia. The heart disease became chronic, and death took place three years after the acute attack of influenza. In this case an autopsy was performed by my friend, Dr. Basil W. Walker, and the signs were carefully recorded. Subsequently I have had a series of cases offering, both from the clinical side and from that of morbid anatomy, evidence of aortitis, extensive or limited, acute, subacute or chronic.

According to the clinical evidence, these differ from the acute cases of simulated angina-pectoris which recover, (1) in that the severe pain is brought about or aggravated by very slight movements or exertion; (2) there is a peculiar “dead leaf” hue of the countenance and a more marked facies hippocratica at all times; (3) that though there may not be a persistent high arterial tension, if the case is observed during a heart-attack the radial artery is found to become contracted and narrow, and the face and mucous membranes to assume a more pallid hue, the artery again dilating and a flush returning to the face and lips when the attack passes off. At the *post-mortem* examination it is not difficult in some cases to overlook the appearances or to ascribe them to an old ordinary chronic atheroma. If the living membrane of the aorta be carefully inspected, there will be found pale elevated patches usually put above the aortic cusps and these swellings may be found to encroach upon the lumen of a coronary artery; in the more chronic cases there are also other patches, showing the softening and transformation of ordinary atheroma. I believe that any enfeeblement of heart fibers, any degenerative change therein, is secondary to these changes of acute, subacute or chronic aortitis.

The morbid signs do not commence in the lining membrane of the aorta. This may be felt quite smooth over the elevations and may even remain thus smooth and normal, though subjacent plates of calcareous substances may be palpated and broken by the fingers. The first change is not in the aorta, but in the terminal branches of the nutrient arteries of the aortic wall at certain parts—the *vasa vasorum*. In the adjacent deeper layers of the internal coat may be found round cell infiltration and, in the more superficial layers of the intima, the fibers are separated by an edematous infiltration, thus causing the elevations or swellings. I cannot here consider these changes at any length, but I have made a large number of microscopic observations and some of these are already published in my article in the *Twentieth Century Practice of Medicine*.¹³

The clinical evidence, happily, shows the probability that the morbid changes of aortitis may be in some cases limited in locality and there may be a return to good average health. In the case of a man, aged forty-one, watched during successive attacks of influenza, there were periods of intense distress and pain referred to sternum and right shoulder (and afterwards abdominal epigastric), together with signs of repeated pneumonia. The paroxysms in this case were intense, but the patient returned to normal, or almost normal, conditions of health. At the earlier period the whole heart was much dilated, but at the later its outline was within normal limits; but systolic and diastolic murmurs (both of slight intensity) told of some imperfection left of the aortic valves. A similar case was that of a lady, aged twenty-seven, in whom, after repeated influenza, with severe precordial distress, slight and variable aortic murmurs were heard. Sometimes these became inaudible, but they were again discoverable, though there were no symptoms of heart trouble. In another case, that of a man, aged forty-nine, after severe symptoms of cardiac distress, long continued, the sufferings were located at the epigastrium; and on many occasions I palpated the abdominal aorta and discovered a localized pulsation; the question was a very difficult one whether this was simply neurotic, or a commencing aneurism. Happily, saccular dilatation did not follow—the patient became restored to fair health; I think it very probable, however, that there was a localized endarteritis in the abdominal aorta, which did not go on to adverse changes. I feel that I ought to express this view with much reserve, but, from the evidence before me several cases in which there was no probability of pre-existing disease but the development of signs of slight and limited disease in the aorta or near its valves, and having the most cogent evidence that influenza can induce acute endarteritis and acute and subacute aortitis, I

¹³ "Neuropathic Dyspepsia and its Correlations with Disturbances of the Rhythm of the Heart," *Lancet*, August 28, 1897, p. 524; "On Some Painful Affections Following Influenza," *Lancet*, January 2, 1892, p. 14; "Diseases of the Blood-Vessels," *Twentieth Century Practice of Medicine*, Vol. IV., pp. 460, 528; also pp. 466, *et seq.*

think the conclusion is legitimate that the form of organic disease which, in the absence of other disease factors, we observe after influenza, is that which is due to morbid changes beneath the endothelium and between the fibers of the intima, the patches produced by such changes being scattered over areas of more or less extent. In some cases there are repeated invasions, so that the signs indicate in some parts recent and, in others, more chronic changes. In the favorable cases, there is a limitation of the area, and the degenerations of tissue and necrotic changes are arrested, scar tissue alone remaining. In regard to the treatment of the very acute cases, I fear that no plan is of much avail to avert the fatal tendency, but it is obvious that in the subacute forms therapeutic hopes remain. In addition to the various means of ministering to ease and comfort during the periods of suffering, phenacetin, antipyrin, hypodermic injections of morphia, judiciously employed, I am persuaded that the protracted administration of the iodids, as recommended by Huchard, is of value. I consider that the best for long-continued administration is the iodid of sodium, in 5 to 10 grain doses. In the earlier stages this may be combined with ammonia and other diffusible stimulants, in the later with small doses of arsenic (3 to 5 minims of Fowler's solution well diluted). I can only very briefly indicate the therapeutic measures to be taken; my chief desire has been to consider the clinical evidence and deduce certain principles upon which treatment, in my opinion, should be conducted.

I have come to the conclusion of my task with much regret for many sins of omission. I have been able to paint the pictures only with the large brush of the scene painter and not with that of the artist of miniatures. I am fully alive to my obligations to the pioneers and the great army of progressive medicine, yet in the course of my life I have learned the wisdom of the maxim, "Hasten slowly." I have seen so many so-called infallible systems of treatment rise and fall. Do not let us mistake the penultimate for the ultimate; apparent and varying improvement for real recovery. It is by patient care and by the adoption, not of one system but of all legitimate methods of treatment, judiciously applied, that we do our best for those under our care. There is no unerring system, but it is not a meaningless phrase when we say that our ruling principle shall be the gradual training of our patient to health, understanding by *health* the conditions indicated by the old Saxon word, "*uholth*," harmony of function associated with integrity of structure.

¹² Davies, Herbert and Arthur S.: "The Mechanism of the Circulation through Diseased Hearts." London: Lewis, 1889, p. 18.

ORIGINAL PAPERS.

*A CASE OF MYXEDEMA.*¹

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WHILE we are not yet in a position to state definitely what part the thyroid gland plays in the animal economy, we have, in the last decade, learned much regarding the phenomena to which aberration of its function, in excess or in deficiency, gives rise. Schiff² had noted as early as 1856 that extirpation of the thyroid gland was followed in dogs by death, and it was pointed out by Ord,³ in 1877, that the thyroid gland was altered in cases of myxedema. J. L. Reverdin,⁴ in 1882, called attention to the symptoms appearing in man following surgical removal of the thyroid gland, and Kocher,⁵ in the following year, described the same condition and suggested for it the name *cachexia strumipriva*. Kocher⁶ also practised transplantation of freshly excised goiter, but without success. In 1883 J. L. and A. Reverdin⁷ pointed out the similarity between the symptom-complex following extirpation of the thyroid gland and myxedema. Horsley⁸ was able, in 1884, to induce symptoms of myxedema in monkeys after ablation of the thyroid gland. Bircher,⁹ in 1889, transplanted apparently healthy thyroid tissue from a goiter into the abdominal cavity of a patient suffering from *cachexia strumipriva*, with great improvement. Eiselsberg¹⁰ in 1890 transplanted the thyroid gland in animals from one part of the body to another, and Horsley,¹¹ in the same year, suggested the grafting of sheep's thyroid in the treatment of myxedema. This suggestion was successfully acted upon soon afterward by Bettencourt and Serrano.¹² In the same year Vessale¹³ prevented the development in dogs of the phenomena following

¹ Read before the Philadelphia County Medical Society September 27, 1899.

² *Rev. méd. de la Suisse Romande*, 1884.

³ *Med. Chir. Trans.*, Vol. LXI.

⁴ *Rev. méd. de la Suisse Romande*, 1882, p. 539.

⁵ *Deutsches Archiv für Chirurgie*, B. XXIX., H. 2.

⁶ See Horsley: *Brit. Med. Jour.*, July 26, 1890, p. 20.

⁷ *Rev. méd. de la Suisse Romande*, April, May, June, 1883.

⁸ Brown Lectures, 1884.

⁹ *Samml. Klin. Vortr.*, No. 357.

¹⁰ *Über Tetanie in Anschlusse an Kropf-Operationen*, 1890.

¹¹ *Brit. Med. Jour.*, July 26, 1890, p. 201.

¹² *Semaine Méd.*, August 13, 1890.

¹³ *Riv. Sperim. di Frenatria e di Med. leg.*, 1890, Vol. XIV., p. 439.

thyroidectomy by intravenous injection of an extract prepared from the removed organ, and in the following year Murray¹⁴ treated successfully a case of myxedema by hypodermic injection of a glycerin extract of thyroid gland from sheep. It was soon found that the same good results could be secured by administration, by the mouth, of the gland itself, or of an external prepared from it. Since this time, large numbers of cases of myxedema and cretinism have been treated successfully with thyroid extract. The effects induced are, however, not permanent, and they persist only so long as thyroid preparations are administered. For the effect to be maintained, the administration must be continued indefinitely, with discriminating variation in dose, and possibly occasional intermission. An active principle, thyroiodin, has been isolated from the gland, and has been employed therapeutically, with satisfactory results. For practical purposes desiccated extracts are the most available, the physiologic dose for an adult being five grains administered from once to thrice daily.

There is no longer any reasonable doubt that the symptoms of myxedema are dependent upon the withdrawal of the influence of the thyroid gland through the agency of a hypothetic internal secretion. Myxedema may be looked upon as the antithesis of exophthalmic goiter, which, there is good reason to believe, is dependent upon hyperplasia and increased functional activity of the thyroid gland. Cases are on record in which exophthalmic goiter has undergone gradual transformation into myxedema—atrophy succeeding hypertrophy of the thyroid gland. There is further a close analogy between the symptoms of exophthalmic goiter and those of so-called thyroidism, a condition resulting from excessive ingestion of thyroid preparations.

Myxedema was first described by Gull¹⁵ in 1873, and subsequently by Ord¹⁶ in 1877, although in 1871 sporadic cretinism had been described by Fagge.¹⁷ Charcot¹⁸ reported cases in 1881, and proposed the name *cachexie pachydermique*. The disease may occur early in life, or late. The congenital or infantile variety is designated cretinism. The disease is more common in women than in men, in the proportion of about seven to one. The disproportion is much less pronounced early in life, perhaps as two to one. In some instances, an hereditary predisposition has been observed. The disease appears to be more common in cold countries than in warm, and in Europe than in America. In some localities it occurs endemically. As a rule the thyroid gland is reduced in size, although occasionally it is enlarged, though inactive. The disease is characterized by a solid edema, the face being moon-shaped, the hands spade-shaped, and fatty tumors are

¹⁴ *Brit. Med. Jour.*, October 10, 1891, p. 798.

¹⁵ *Clin. Soc. Trans.*, 1874, VII.

¹⁶ *Med. Chir. Trans.*, 1877, LXI.

¹⁷ *Med. Chir. Trans.*, LIV., p. 166.

¹⁸ *Gaz. des Hop.*, 1881, No. 10.

present in various situations. The skin is dry and rough: its secretion is diminished; the hair is scanty, coarse, and brittle. the nails are ridged, the teeth are carious. The temperature is subnormal, and patients are often unduly sensitive to cold. Mental impairment exists, and may assume the form of dullness or torpidity or deficiency. Insanity sometimes occurs. There is impaired mobility and muscular weakness. Anemia of varying degree is present as a rule, and in women menstrual disturbances are common.

Since the institution of thyroid treatment the prognosis has been most favorably modified, as the symptoms can be held in check by this means. In cretins the improvement, mental, physical and developmental, is



ADIPOSIS DOLOROSA.

truly remarkable; in adults it is only less remarkable because of, and in proportion to, the approximation to maturity, both physiologic and anatomic.

There is little difficulty in diagnosis in typical cases. The edema of nephritis may cause the face to assume the characteristic moon-shaped appearance, and the remainder of the body to be swollen, but the swelling is not solid, and it pits on pressure, while the presence of albumin and tube-casts in the urine, of effusions into serous cavities and perhaps of changes in the retina, the previous history and absence of trophic and other tissue-changes, and of mental deficiency point to a renal origin for the symptoms. Obesity scarcely resembles myxedema, but the increased deposit of fat may give rise to an appearance not entirely unlike that resulting from the mucoid change

in the subcutaneous connective tissue. Nor is the resemblance closer on the part of the painful form of adiposis described by Dercum,¹⁹ and of which I have reported a case previously.²⁰

The accompanying photograph from this case will illustrate the gross differences between the two conditions. The pendulous masses and the other accumulations of fat in such cases may be much like those observed in myxedema, but the solid edema, the aberrations in development, and the mental changes, are usually wanting. It should, however, be borne in mind that there may be some fundamental relation between myxedema and the several varieties of morbid fat-deposition and fat-accumulation, for with the latter there may be associated atrophy of the thyroid gland, and in them also the administration of thyroid extract is often attended with striking therapeutic results.

Myxedema is not so common that the report of an isolated case would seem to be without interest.

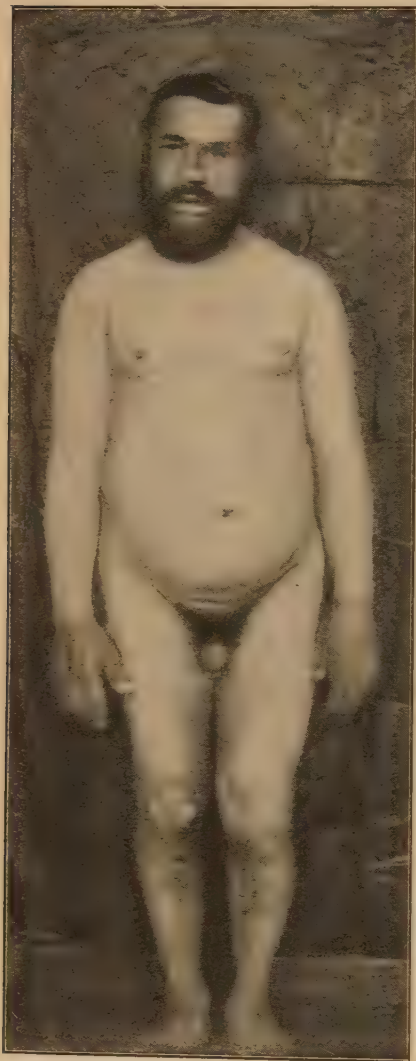
A. B., fifty years old, a native of Russia, presented himself at the Philadelphia Polyclinic, complaining of pain in the epigastrium, radiating to the hypochondria, and also of pain in the lumbar region, in the muscles of the extremities, and in the precordia. The epigastric distress was aggravated by the taking of food, which also induced nausea. The appetite was preserved, but the bowels were constipated. There was slight cough, with free expectoration of tenacious mucus. The appearance of the patient was striking and characteristic. It is well portrayed by the accompanying photographs.

The man was thick-set, and rather short in stature. His voice was hoarse, but he spoke with intelligence. His lips were thick, the lower somewhat everted. The tongue was exceedingly large, and well filled the mouth. The nose was large and broad, but the ears were of ordinary size. There were areas of circumscribed alopecia on the scalp, probably in consequence of previous favus. The hair presented no peculiarity. The thyroid gland was palpable. The hands were thick and rather broad than long; they could not be clenched. The circumference of the right metacarpus was 23.5 cm. and that of the left 22.5 cm. The mammary fat was excessive. There was impairment of the percussion note below the clavicle, but there was no other indication of pulmonary disease. The action of the heart was rhythmic and its sounds clear. A view of the larynx could not be obtained. The uvula and the palate were red and irritable. The nares were found fairly clear; the septum was thick, and there was a spur on the left side. There was little growth of hair in the axilla. Perspiration was free, perhaps unduly so. The patient complained of being always drowsy. He related that his parents had died at an advanced age, and a brother in convulsions. All of his six children were well. One had died. The man had done well at school, and was

¹⁹ *Univ. Med. Mag.*, December, 1888, p. 140; *Amer. Jour. of the Med. Sciences*, 1892, p. 521.

²⁰ *Phila. Med. Jour.*, October 8, 1898; *Jour. of the Amer. Med. Assoc.*, November 12, 1898.

conscious of no personal peculiarity. He was given thyroid extract, five grains daily, and his lips, tongue, and hands diminished appreciably in size, but he was desultory in his attendance, so that a continuous effect could not



MYXEDEMA.



MYXEDEMA.

be maintained. His weight, however, decreased in the course of seven weeks from 189 to 181 $\frac{1}{4}$ pounds. The circumference of the hands was found less on measurement, while their mobility was increased, so that it became possible to clench them.

HEMORRHAGIC DIATHESIS IN TYPHOID FEVER.

BY J. H. MUSSER, M.D.,

Professor of Clinical Medicine, University of Pennsylvania; Physician to the Philadelphia and Presbyterian Hospitals, etc.

AND

JOS. SAILER, M.D.,

Of Philadelphia.

THE following case, on account of the very grave character of the complication, and because of the existence, as discovered in the autopsy, of two interesting congenital anomalies, one of which at least contributed to the fatal result, has seemed worthy of being put upon record:

A. McC., male, white, nineteen years of age, was attacked by severe headache on the twenty-ninth of December. Two days later he had severe chills, nose-bleed, diarrhea, abdominal pain and also slight cough, but continued at work until the following Monday, three days later.

His previous and family history was negative, except for a tendency to become short of breath upon exertion.

He was admitted to Dr. Musser's ward at the Presbyterian Hospital on the second of January with a temperature of $101\frac{2}{3}^{\circ}$. There was a profuse roseolar eruption upon the back, and a number of spots upon the chest and abdomen. A few spots were also found upon the arms. There were some moist rales in both lungs, heard anteriorly as well as posteriorly. The spleen was not palpable. There was slight tympanites. The apex beat was strong, slightly diffuse, and situated just outside the nipple line in the fifth interspace. The dullness extended from the lower border of the fourth rib and the left sternal border. At the apex the first sound was greatly accentuated, and there was a short systolic and a long, soft diastolic murmur. The latter was also heard in the axillary line. The second sound was split in the third interspace and over the pulmonic cartilage.

The typhoid state was very well marked. The tongue was dry, brown and furred. There was considerable tremor of the hands. The pulse was of full volume, low tension and dicrotic. Throughout the course of the disease, the rate varied between 90 and 120 per minute. The condition of the heart remained about the same during the disease. A faint diastolic murmur was heard in the third interspace on the left, and toward the end all the sounds became somewhat fainter. A diagnosis was made of mitral obstruction, and perhaps slight aortic regurgitation, although the latter condition, in the absence of *pulsus celer*, and on account of the very slight enlargement of the heart, was considered doubtful.

On the tenth the patient complained of sore throat, the pharynx was red-dened, there was no membrane and the tonsils were not enlarged. No cultures were made, and the day following the mucous membrane appeared to be normal. On this date it was noted that a profuse eruption of spots had appeared. Until the fifteenth the course of the disease was favorable, the fever never reaching 104° and responding readily to sponges. On the fifteenth there was profuse epistaxis, oozing of blood from the gums and mucous membrane of the tongue, a profuse eruption of petechial spots, and a large ecchymosis into the right skin over the right shoulder. The pulse was weaker, the heart sounds faint, and there were some moist rales in both lungs. During the following night a considerable amount of blood was lost from the mouth. The tongue was swollen, cracked, and covered with densely adherent dry blood. The lips were also covered with caked blood, and were sore. There was hematuria, and the petechial eruption was more extensive. There was saggillation upon the chest, and considerable subcutaneous effusion into the skin of the right shoulder, left trochanter, and left scapula. These were greenish blue, swollen and very tender. As a result of stimulation the heart's action was stronger. The first sound at the apex was hollow and booming; a systolic murmur was heard in the fourth interspace, and a faint diastolic murmur in the third.

The next day, in spite of fresh lime juice, calcium chlorid, opium and ergot, the hemorrhage continued, blood being passed from the bladder and bowel, as well as from the nose and mouth. The subcutaneous effusions were becoming larger, the tongue was greatly swollen and very painful. The general condition of the patient continued to grow worse, and the swollen tongue interfered greatly with respiration. The pulse grew weaker, and death finally occurred from respiratory failure, just after midnight on the nineteenth. The Widal test had been reported positive on two occasions.

At the autopsy the following conditions were found: Both lungs were congested posteriorly, and the left contained some areas of catarrhal pneumonia. The foramen ovale was patulous. The left ventricle was greatly hypertrophied and the aortic ostium was guarded by only two semilunar valves, the anterior leaflet having been formed by the coalescence of the anterior and right leaflets. In the middle of the large sinus of Valsalva there was a ridge representing the incomplete division. The edges of both leaflets were greatly thickened. The aorta appeared to be narrower than normal. The wall was perfectly elastic, and there was no base of atheroma.

The spleen was slightly enlarged and softened. The kidneys showed moderate cloudy swelling, and the pelvis were filled with blood.

The gastro-intestinal tract to within four feet of the ileo-cecal valve was apparently normal. From this point the Peyer's patches began to show ulceration, and a single huge ulcerated mass involved the whole of the lower end of the ileum and the ileo-cecal valve. A Meckel's diverticulum about 6"

long and of about the same diameter in the small intestine arose from the ileum about three feet above the valve, opposite the mesenteric attachment, and contained a typical oval typhoid ulcer. The mucous membrane of the appendix was thickened and pigmented, and showed some superficial adhesions. The bladder contained some hemorrhagic areas, and ecchymoses were found in all the serous membranes. The thymus gland was persistent. The mucous membrane of the larynx was edematous, and over the vocal cords were seen some shallow ulcers with thickened walls. Unfortunately, neither the visiting nor resident pathologist could be present at the autopsy, which was performed by the resident physician, Dr. Apgar, in the presence of one of us, and cultures could not be taken from the organs.

The association of typhoid fever with the hemorrhagic diathesis or else the development of this diathesis in the course of this disease is a condition that, although uncommon, has been noted by many writers. But the majority of these have dismissed the subject with a most cursory mention. Chantemesoe, in the *Traité de Médecine*, speaks of hemorrhagic typhoid or a grave form of the disease, usually fatal, and characterized by subcutaneous hemorrhage, usually about the joints, and bleeding from the mucous membranes, but does not report any specific case. Anders barely mentions the condition, and implies that the hemorrhagic diathesis must necessarily pre-exist. Wilson, in his article in Loomis's System, fails to mention this condition, as does Pepper in his own text book. Osler has seen but one case which recovered. He has observed a petechial condition in five of 389 cases. But few cases of this condition appear to have been reported in recent years. Nicholls (*Montreal Medical Journal*, June, 1896) has reported two cases, characterized by a petechial eruption and effusions about the joints. Openchowski (*Klinische Therapeutische Wochenschrift*, January 2, 1898) has observed a case of hemorrhage from the mucous membranes that was cured by an attack of croupous pneumonia.

Treatment of Eclampsia. Parisot (*Rev. Internat. de Med. et de Chir.*, March 25, 1899) states that the treatment of eclampsia aims to limit the production of toxins in the organism and to facilitate their elimination, when formed, through the skin, through the intestinal mucous membrane, and especially through the kidneys. Milk is the best food, as it produces little fermentation, and favors diuresis. Insoluble antiseptics are given, salol, naphthol, benzonaphthol, etc., but, according to Deschmaecker, the best intestinal antiseptic is saccharin in divided doses, amounting to 1 or 2 gms. (15 to 30 grs.) a day. Purgatives are more to be relied upon than are intestinal antiseptics. Diuretic drinks, warm or vapor baths to increase the action of the skin, and inhalations of oxygen to increase the rapidity of combustion have their uses. Blood-letting is advisable if an attack is imminent. If there are nervous symptoms 15 to 30 grs. of chloral and the yolk of an egg in 3 oz. of milk should be injected into the rectum. If this fails to quiet the patient, chloroform may be administered.—*Med. News.*

ALTITUDE AND HEART DISEASE.¹

BY DR. HENRY SEWALL,
of Denver, Col.

ALL discussions as to the effect of altitude in heart disease are based on theories of the mechanics of the circulation which are not yet firmly established. So far from a moderate altitude, as that of Denver about one mile above sea-level, being a disadvantage in some cases of valvular heart disease, it has seemed to me to be distinctly beneficial. This conclusion is based upon the clinical observation of diseased hearts and strengthened by the changes occurring in weak but structurally normal hearts recently removed to Denver from lower levels. In these cases, usually sufferers from pulmonary tuberculosis, there is manifested soon after arrival, in my experience, more or less cardiac disturbance attributable to overstrain of the right side of the heart. This is the period when muscular exercise is apt to work greatest injury to the patient. In cases that do well, the signs of heart strain pass off after a few days or weeks. The phenomenon is readily explained if we admit that with removal to higher altitude the aspirating power of the thorax is increased by augmentation of the depth and frequency of inspiratory movement. In the well nourished heart there probably occurs a compensatory hypertrophy of the right side, which enables it to discharge easily the increased intake of blood and in turn subject the lungs to more vigorous irrigation.

In cases of mitral stenosis there is already a characteristic excessive burden thrown upon the right heart, and from the theoretical standpoint it would seem bad practice to advise an environment in which the flow of blood into the right ventricle would be accelerated. On recalling those cases of heart disease that I have seen go to ground in Denver, without sufficient reason, it has been found that the signs of mitral stenosis characterized the greater number.

On the other hand, it seems clear that the condition of cardiac nutrition is, in the end, the factor on which the heart must depend for its powers of compensation, and the means by which an improvement in this nutrition is to be gained are more to be sought than the conditions which lead to increase of burden on the heart are to be feared. Physiologic experiment has demonstrated that the heart is almost unique in its tolerance of mechanical injury, but with defective metabolism its powers begin at once to fail.

It is stated on good authority that a sudden fall in the specific gravity of the blood is the immediate precursor of loss of compensation in heart disease. The anemia in this condition is one of its characteristic features. The literature supporting the view that high altitudes cause an increase in

¹ Remarks made during the discussion of a paper by Dr. R. H. Babcock, on "Altitude and Heart Disease," before the American Climatological Association, at its meeting in New York, in June, 1899.

the red corpuscles of the blood is well known. My colleague, Dr. W. H. Bergtold, has made a careful comparative study of the specific gravity of the blood, and finds that the specific gravity is characteristically higher in Denver than at sea-level. An influence of residence in moderately high altitudes which seems to me of unrivalled importance, if somewhat mysterious in its mode of action, is that manifested in the psychical attitude. The sense of *well-being*, physical and mental is apt to be improved. No one will dispute the importance of the psychical factor in heart disease. The facts seem to me to warrant the conclusion that moderately high altitudes favorably affect cardiac metabolism but throw on the heart, especially the right heart, an increase of burden. So long as the nutritive powers of the heart-tissue are normal, such altitudes are favorable, because, while not overburdening the heart, they facilitate through it the nutritive changes in other vital tissues. But so soon as compensation fails from defects which can be attributed to retrogression of cardiac tissue, the dangers of the increase of the physiologic burdens incident to high altitude far overbalance the benefits of its stimulus.

A female patient with marked mitral stenosis, about a year ago, came to Denver from Chicago, where she had been under the careful observation of Dr. Babcock. I questioned her carefully as to the effects of different altitudes upon her condition. She said she could stand Colorado Springs, with its altitude of 6,000 feet, with only fair comfort. In Denver, 5,280 feet, she was just as comfortable as in Chicago, and better than in Los Angeles. But in Cripple Creek, 9,300 feet, she at once began to feel miserable, and at the end of a week would break down completely. Two months ago I saw the patient through an attack which had come upon her in Cripple Creek. She soon after returned to her normal condition, in which she was able to take a fair amount of exercise with comparative comfort.

The Cultivation of the *Bacillus Lepræ*. At a recent meeting of the National Academy of Medicine of Bogota, Dr. Carrasquilla asserted that he had successfully cultivated the bacillus leprae on sloped solidified human serum and on beef bouillon prepared according to the method of Thoinot and Masselin. The bacillus was then cultivated from serum to serum, and from bouillon to bouillon, pure cultures being always obtained. Dr. Carrasquilla further states that he observed the bacillus in motion in 2 stages of its development—as long, slender bacilli, which move in an undulatory manner; and as short, coarse, almost elliptical bodies moving rapidly in a straight line. In the latter he fancies he has observed flagella, but he is not positive as to this. His results do not entirely accord with those obtained by Prof. Spronck, of Utrecht, who has also claimed to have cultivated Hansen's bacillus. Prof. Campana, of Rome, has also convinced himself that he has successfully cultivated the bacillus leprae. These experiments require confirmation and extended observation before they can be accepted as absolute.—*Brit. Med. Jour.*

TALKS TO GENERAL PRACTITIONERS.

TREATMENT OF SYPHILIS.

(Continued.)

BY J. D. THOMAS, M.D.,

Professor of Genito-Urinary Diseases, Western Pennsylvania Medical College;
Genito-Urinary Surgeon to the South-Side Hospital, Pittsburg, etc.

SOMETIMES when too much mercury has been administered, its deleterious effects may be mistaken for ravages of the disease. In a case seen in consultation where mercury had been given in increasing doses to overcome ulceration of the gums and fauces, accompanied, at times, with dangerous bleeding, all of which were presumed to be due to the patient's syphilis, I recognized at once the true cause, advised immediate withdrawal of the mercury, and suggested instead an iron tonic internally and local cleansing with peroxid of hydrogen, followed by insufflation of boric acid. There was no further bleeding, and healing rapidly followed.

Hypodermatic injection of mercury as a routine practice in syphilis is not practicable. It is painful, and not free from danger, as we infer from some published cases; although, in my own cases so treated, no untoward accidents occurred. The painfulness of the treatment precludes its use with our private patients, and dispensary patients remain away when so treated. It may be practiced with advantage, however, in the army, in insane asylums, exceptionally in hospital practice and with patients who have the chancre on exposed surfaces. The preparations I have used were the bichlorid of mercury in solution, and calomel in emulsion—one-sixth of a grain of the former every other day and one grain of the latter once a week. These injections, especially the insoluble ones, leave an induration that persists, in some cases, as long as three weeks. The injections were made into the buttocks and in the tissues within the angle of the scapula.

During the latter part of the second year of the disease, as well as in the third year (the declining stage), it is well to give iodid of potash in combination, or alternating, with the mercurials. At this time the iodid should be given in small doses—five or ten grains three times a day. The potash acts as a cleaner-up, as it were.

Mucous patches about the mouth are a very annoying feature frequently met with. To prevent these the entire buccal cavity should be kept perfectly clean, and tobacco, in all forms, prohibited. They should be touched every second or third day with a strong solution of nitrate of silver, and, if

rebellious, occasionally with acid nitrate of mercury. As a gargle, *lotio nigra* or a solution of chlorate of potash will be found useful.

In a certain number of cases the sequelar or tertiary stage follows. The lesions of this period are due to an unremoved infiltrate, or to an exaggerated hypertrophy of this unremoved infiltrate, assuming the form of new growths, embryonic tissue or chronic inflammations. The peculiarity of the lesions at this time is that they are manifested, as a rule, in the deeper structures—connective tissue, arteries, bones, etc. The brain and spinal cord lesions of syphilis are usually degenerations secondary to arterial disease—endarteritis, thrombosis and embolism—or to meningeal gummata. A veritable neuritis is exceptional. We find tertiary syphilis, as a rule, in the dissipated, in the untreated and in the insufficiently treated.

In the treatment of primary and secondary syphilis the aim of the physician should be the prevention of sequelae. Primary and secondary syphilis are not dangerous to the individual himself—they are dangerous to others. Tertiary lesions are dangerous to the patient himself—not to others. Tertiary lesions are followed by scar tissue. A broken-down or absorbed gumma upon the leg will leave a scar, which in nowise compromises the function of the limb; but let a scar occur upon or within the brain or spinal cord, and we have a condition that is hopelessly irremediable, for it has damaged organs that are vital to the functions of the whole being. Medicine will remove the disease, but not the scar tissue. A fact not generally noticed, but one that I have observed, is that where we have what is called nerve syphilis we are not apt to have gross external manifestations in the form of ulcers, gummata or tubercles, and if we fail to get a history of the initial lesion the case is quite obscure. Again, we meet with cases where the surface lesions leave no doubt as to the diagnosis, but brain and cord symptoms are absolutely wanting.

The treatment for the tertiary period is iodid of potash, and it must be given in doses adequate to cause removal of the new growth—absorption of the exudate. In some cases thirty grains in the twenty-four hours will suffice, while in others three hundred or more grains will be required in the same space of time. These large doses do not derange the stomach, but generally improve the appetite and induce a feeling of well being. To give small doses when large ones are demanded is a fatal error. In the sequelar stage some place too much dependence upon mercury. As useful as mercury may be at times to bring about fatty degeneration or softening of indurated tissues, thus producing a condition for the more efficient action of the iodid, the latter is the *sine qua non*.

The following case, that had been under the care of a regular physician for one year, shows the result of inefficient medication. Had the lesions been central it would have been fatal. From notes:

J. T. acquired syphilis eight years ago; took treatment for a fraction

of a year. Until one year ago remained well, when he noticed some enlargement of the glands in the left groin. Although he then placed himself under the care of a physician, with whom he has remained until now, he continued getting worse. At the present time, has twelve broken down gummata in the left groin and inner aspect of the thigh on the same side. Has also one broken down gummatous gland in the right groin. The cavities vary in size from ones in which an English walnut might be placed to ones in which a pea might be inserted; some assume the form of rhagades. The patient was placed (two months ago) upon increasing doses of iodid of potash, and in *one week* the destructive processes had not only ceased, but the wounds were assuming a healthy appearance. At the present time he is taking fifty grains three times a day and all the wounds have healed. A wash of *lotio nigra* was used locally until the ulcers healed.

In prescribing the iodid it is better to give it in a saturated solution in *distilled* water; one drop of which represents one grain. I find that 90 per cent. of patients take this readily when well diluted with water. With the occasional patient who cannot take it in plain water, it may be given in essence of pepsin, coffee or milk.

In addition to medical treatment, the hygienic must not be neglected. Temperance in all things must be insisted upon.

Precocious syphilis is that form that is occasionally met with where lesions simulating the sequelar ones may appear as early as the fifth or sixth month after infection. We find it oftener in the female than in the male. Such cases are always troublesome, and hence the prognosis is much more unfavorable than in the ordinary case. In these cases the iodid must be administered early in addition to the mercury. A tonic treatment must also be instituted early. Sending these patients to the hot springs would be advisable.

PUS AND ITS TREATMENT.

BY EDMUND W. HOLMES, M.D.,

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THE older practitioners considered pus to have been derived from the endothelial lining of the blood-vessels, from leucocytes, or from the connective tissue, mixed with cellular and intercellular debris; a slight irritation inducing inflammatory exudation and congestion; greater irritation, inflammatory lymph; still greater, pus: and even greater, gangrene. It was also considered possible for these conditions to result from constitutional conditions, with or without external agencies. The germ theory has changed

this, so that pus-producing organisms by contact, and pus-producing organisms by absorption and distribution throughout the body by the blood and lymph channels are now regarded as the primal cause. In surgical work pus-collections are a source of dismay to the surgeon, and, if post-operative, a reflection upon his manners and customs.

Its presence may or may not produce grave constitutional symptoms. It may, on the one hand, evoke a chill, fever and sweat, with the regularity of an intermittent, headache, aching limbs and lassitude, like malaria; or, on the other hand, being surrounded by a thicker area of lympho-cellular infiltration, considerable collections may produce no symptoms until opened, this being formerly attributed to the admission of air. The profession do not sufficiently appreciate that intermittency is a nervous phenomenon, from an impression upon the nervous system, and therefore accompanying solar neuralgias, hepatic derangements, hematuria, hay-fever, and absorption of pus, as well as from the absorption of the plasmodium *malariae*.

Therefore, no more serious lesson can be impressed upon young and old alike, than the fact that, at least in these latitudes, the diagnosis of malaria or intermittent fever should not be made till the possibility of these other conditions, and particularly the presence of pus, has been eliminated. On the other hand, being surrounded by an inflammatory zone, choking the lymph channels, large masses of pus may exist unnoticed, until their evacuation relieves pressure, opens up the lymph canals, and then constitutional symptoms will quickly follow. In fact, it may be remarked, in passing, that the main difference between the diffused suppuration and the localized collection of pus or so called "abscess" depends upon whether the organism is sufficiently active or not to break down all barriers and diffuse itself amongst the tissues without limitation.

The violence of the constitutional phenomena depend, also, upon the virulence of the bacteria and their toxins, and this largely upon the age of the micro-organism, almost with the certainty of an actuary's tabulation.

Thus, gonorrhea from a fresh focus will come on quickly (inside of four days) and work most violently, while an old gonorrhea will only inflame a new urethra in the course of ten to fourteen days, and induce a subacute condition with a thin, whitish discharge. The virulence of the gonococcus infection per vaginam, as a rule, by the time it reaches the tubes is at a minimum; with the tubercle bacillus the processes are so slow, its pyogenic function is but weak and it needs a double or a reinfection to produce true pus. For these reasons surgeons find in intra-abdominal operations that the duration of the pus condition is an important determining factor in the subsequent onset of, or escape from, a general peritonitis, and in times of uncertainty an element in a "waiting" diagnosis. The idea of youth—

vitality of the pus organism—is also of value to the busy surgeon. We know the prejudice against those who are in the dissecting-room, yet the ptomaines of well-injected cadavers are as nothing compared to the virulence of fresh young pus-producing bacteria, so that an operator who has handled a case of virulent streptococcic infection, in addition to the usual antiseptic washings, should not allow himself to touch another patient for forty-eight hours, so as to allow time for the microbes to die from exposure and old age. In the same line, operative wounds, the most virulent, are manifest inside of forty-eight hours, while those occurring after the fourth day usually run a mild course. The treatment depends upon a thorough appreciation of the modern pathology. Thorough evacuation and drainage are the chief things. A false security is engendered by too great dependence upon antiseptic fluids—which, when strong enough to be really bactericidal, will destroy the tissues. Most of the antiseptics in the strength usually employed are only inhibitive. So iodoform, antipyrin, and bismuth are drying powders absorbing the blood serum which is nutritive to these low-type micro-organisms, and peroxid of hydrogen finds its best use in over-distending the crevices, being thus far a cleansing agent.

An abscess or diffused suppuration being present, free evacuation is the first indication. We are sorry to say that many of the profession seem to be still of the opinion that pus (unlike other fluids) will run up-hill. Cold abscesses are no exception. We have yet to see any good come from the use of iodoform and glycerin, either by direct injection or by cataphoresis. If very large they may be drawn off gradually with the aspirator. Sometimes, as mentioned above, constitutional symptoms result from the relief of pressure upon the absorbents; but, in any event, we protest against the let-alone policy. We open to get rid of the mass of the pus, which is a foreign body and an irritant, to get just so many micro-organisms out, to clean off the raw absorbent surface, to remove ligatures and sutures and spicules of bone, if present, and to prevent, if possible, the formation of new foci elsewhere by reinfection. Having evacuated and washed out thoroughly and secured free drainage of the serum, firm pressure with a wet bichlorid dressing and the firm application of a roller bandage to bring the sides of the abscess cavity together will secure the best results. As to washing out the abscess, a weak solution of tincture of iodine is perhaps the best, with a suspicion that the usual solutions of bichlorid of mercury, permanganate of potash, carbolic acid, peroxid of hydrogen, or of sterile water are about of equal value. Thorough cleansing, forcibly enough to distend the cavity, with curetment to remove unhealthy granulations, if necessary, drainage at the most dependent parts, asepsis and equable bandage pressure are of the greatest value.

THE TREATMENT OF CHRONIC ASTHENIC GASTRITIS
(ORDINARY CHRONIC GASTRIC CATARRH).¹

BY BOARDMAN REED, M.D.,

Philadelphia, Pa.

Treatment—Dietetic and Hygienic Generally.—As in chronic acid gastritis, so in the more familiar form of chronic gastric catarrh with depression of the glandular function, you will need to guard the patient always against foods and drinks of a decidedly irritating character, as well as the more fermentable ones, which tend to aggravate. In the asthenic form, however, the necessity of keeping to the blandest articles is very much less. The milder condiments can sometimes be taken with advantage and small doses of the sour wines may be well borne in a certain proportion of cases. But a free use of any of these things will surely be injurious.

In no disease is it more emphatically true that the patient, not the disease, needs to be treated. In arranging the diet of patients with catarrh of the stomach, hard and fast rules can rarely be applied with safety. Each case by itself needs to be closely watched and the secretions and excretions, especially the gastric juice and urine, should be carefully studied. If you attempt to follow in all your cases the hobbyists who advise an exclusive milk diet, the use of meat and hot water only, or a reliance on cereals, vegetables, fruits, nuts, etc. (the so-called natural diet), you will often be disappointed, particularly with the last mentioned group of foods.

There are comparatively few positive indications and contraindications. The articles that most frequently disagree markedly are those containing cane sugar, all forms of fresh yeast bread, rolls, etc., and the beers and malt liquors generally because of their proneness to rapid fermentation. Vinegar, pickles, cabbage, green corn, beans, shell fish, fried things and all very coarse, tough or hard substances which cannot be finely divided by the teeth and well masticated, are, as a rule, unsuited to these cases. Very much will depend upon the stage of the disease, the state of the nerve centers, and the strength of the muscular system; also upon the other treatment. For example, when a patient can spend some hours daily in rowing, pulley exercises, or other gymnastics for the trunk muscles, horseback riding, walking or bicycling, and have in addition sponge baths and lavage as well as abdominal massage, a very much more liberal variety of diet can be allowed than would be practicable if there should be so little vigor of the muscles, nerves and circulation as to compel the adoption for a time of the rest treatment.

Generally, I enjoin the avoidance of all the objectionable articles above mentioned, as well as, in bad cases, most of the vegetables, except in the purée form; but I have seen exceptional cases in which there was a very feeble heart, marked malnutrition on account of associated intestinal catarrh, and

¹ Read before the Northwestern Medical Society of Philadelphia, October 3, 1899.

an intolerance of the stomach tube, so that the usual course of treatment had to be departed from in various ways. Both lavage and the customary restrictions in the diet, including a denial of sweets, were here followed by increased emaciation and debility. Therefore, the most nutritious foods were selected, and, besides much milk, cream, eggs, meat juice, chopped beef, purées and the finer cereals, some sugar even had to be allowed in order to maintain nutrition, while massage and the Nauheim resisted movements, with some cautious medication, were relied upon mainly in the way of treatment.

In general the best course as to diet is to nourish as fully as possible without risking excessive fermentation and without irritating or overburdening the digestive organs, bearing in mind that at the best much of the food is lost through the fermentative and putrefactive processes in these cases.

Three to five moderate or small meals a day are best in most cases, especially when the motility of the stomach is weak. Exceptionally two meals are better. They should be eaten when the patient is free from worry and fatigue, and in as cheerful company as possible. Above all, it is necessary that plenty of time should be taken for meals, the food being most thoroughly masticated and insalivated.

As to the kind and quantity of liquid to be taken at meals, no inflexible rule can be made. Strong coffee and tea are drugs rather than foods, and are likely to do harm, at least in the end, though they are sometimes tolerated well for a time. Chocolate is often even more indigestible. The lighter forms of cocoa, especially an infusion of cocoa shells, more frequently agree. Cereal coffees, with good cream or milk, suit well in most cases and a mixture of milk and warm water flavored to the taste may generally be permitted. Claret and water or other light wine may prove safe, and even useful, when there is no uric acid excess or very high acidity in the urine. The amount of any fluid taken with the meal must be strictly limited, especially when the stomach is dilated or has weak expulsive power. More than half a pint is not usually desirable.

The general hygienic requirements are in the main those which every delicate person should observe. Indispensable are an abundance of pure outdoor air and sunshine. Therefore the seashore, mountains, or country will be the best place of residence—much better than any crowded city. Fatiguing in-door or sedentary occupations and excesses of every kind should be avoided and there should be plenty of sleep in large, well-ventilated rooms. Exercise out of doors is really essential to a cure, and must be taken by all except in the weakest cases.

Mechanical Forms of Treatment.—Lavage is probably the most useful of all the curative measures. When the amount of mucus and germ infection are great, it should be done every day (Riegel says twice a day), preferably in the morning before breakfast. Plain, sterilized warm water will often answer well enough, but the addition of table salt, two teaspoonfuls

to the quart, will render it more efficacious. Drinking a pint or more of warm water, followed by vigorous contractions of the diaphragm and abdominal muscles, with the patient in different postures as hitherto described, so as to detach adherent mucus from the walls of the stomach, is a most helpful preliminary to the washing-out process. After passing one or two quarts of salt solution into and out of the stomach, a solution of resorcin or of alum, half a teaspoonful to the quart, or of nitrate of silver, five grains to the pint, may be introduced and quickly withdrawn in the more stubborn cases with advantage. The silver nitrate should be followed by a solution of common salt to prevent any possible danger. Dilute HCl, a dram or dram and a half to the quart, has worked well in some cases. A large number of other astringent and antiseptic drugs has been recommended for use in the same way and one will sometimes succeed when another has failed. A safe rule will be to employ as a maximum amount at one time not more than ten times the usual medicinal dose of the drug; dissolve this in at least a quart of water and then remove it promptly and completely. But it will be best to begin always with a much weaker solution.

Stomach washing should not be done too often (rarely oftener than once a day) or persevered with too long. As soon as the mucus lessens markedly, it can be limited to thrice or even twice a week, and when none at all is found, it is better to repeat it once a week for a few weeks longer. Even if mucus is found which has come from the nasopharynx or esophagus, as often happens, it will be desirable to cleanse it away once or twice a week until the local catarrhal process above can be cured, since otherwise its presence facilitates the rapid multiplication of bacteria in the stomach, and thus keeps this organ infected, besides doubtless favoring the development of catarrhal inflammation in it.

In the comparatively rare cases in which lavage cannot be practiced, something in the way of cleansing the stomach can be accomplished by having the patient drink two glasses of warm water several times a day an hour before meals with the view of washing the mucus downward. This cannot be safely done, however, in dilatation or marked motor insufficiency of the stomach, since in such cases the viscus does not readily empty itself and the increased contents would only further embarrass it. In the majority of cases of chronic gastric catarrh with a deficiency of HCl, the motor power of the organ is not much impaired, at least in the earlier stages; but at the best the warm water drinking is much less efficient than lavage, since it only carries the mucus and its contained bacteria on into the intestines, from which they are by no means always promptly expelled.

In Germany the saline waters of Homburg, Kissingen and Wiesbaden, especially, are used in a similar way; but my observations while at Homburg recently did not impress me very favorably with the value of the routine use of such waters in gastric catarrh. Either aggravation of the symptoms or disagreement in some way was not seldom noticed. The addition of salt or

of salt and soda together to the warm water has been also advised, but a free use of these remedies internally would not be nearly as safe as lavage.

In connection with diet and lavage, skilled massage of the abdomen is as potent for good in this form of gastritis as it is for harm in the acid form and in simple hyperchlorhydria. One of the many good results of massage of this region is a strengthening of the abdominal muscles as well as the muscular walls of its contained organs. The glandular function can also be powerfully stimulated thereby.

These objects can also be promoted by various special exercises and forms of gymnastics. Rowing is one of the best of these, and an excellent substitute is the use of pulleys, especially those made with elastic rubber cords, which afford a yielding resistance. There are also numerous bendings and twistings of the body which do not require apparatus of any kind and yet are very useful in developing the trunk muscles and the muscular walls of the abdominal viscera. They are described and pictured in works on physical culture. Most out-door sports, especially golf and tennis, are helpful in the same direction, and it should be borne in mind that in proportion as the muscles—especially those of the abdomen—are developed, all the atonic forms of indigestion, including gastric catarrh, become milder and more manageable, provided always a proper diet and other hygienic requirements are observed.

Electricity is less useful in this disease than in acid gastric catarrh, but when asthenic catarrh of the stomach is complicated with dilatation, as in many of the severer cases, intra-gastric faradization with the ordinary current from a coarse coil and with slow interruptions can do great good. Combined with very careful diet helped out by rectal feeding, and with regular lavage and massage, I have seen it rescue cases from the brink of the grave. This procedure was fully discussed in my talk on the treatment of acid gastric catarrh in the September number of the *INTERNATIONAL MEDICAL MAGAZINE*, and an illustration was there given of the intragastric electrode as modified by myself.

Medicinal Treatment.—Drugs internally are much less useful here than the agencies already described. Laxatives need often to be prescribed, though the hygienic measures and mechanical forms of treatment will often overcome the constipation. It is indispensable that there should be regular and complete evacuations of the bowels. Hydrochloric acid and pepsin in moderate, or sometimes even large, doses are usually important adjuvants in not too advanced cases, and may be of marked palliative value, even in the stage of atrophy. The manner of using these and reports of cases illustrating it will be found in a paper of mine presented to the American Medical Association in June, 1898, and published in the *INTERNATIONAL MEDICAL MAGAZINE* for October of the same year. Nitrate of silver, one-quarter grain, combined with five to ten grain doses of bismuth, may occasionally do good, and, when the patient has to forego the advantages of

lavage, a little help toward lessening the fermentation can often be obtained from antiseptic drugs, of which one of the most efficient and least hurtful, if not pushed too long, is carbolic acid in one to two minim doses after meals, given with glycerin and guarded with spirits of chloroform, compound tincture of cardamon and peppermint to disguise its taste and smell.

Resorcin in two to five grain doses and sulpho-carbolate of zinc in about the same, have been much vaunted and will sometimes lessen the fermentation, but in my experience they have been rather disappointing.

The nausea is best controlled by diet and lavage, but when the latter is impracticable, minute doses of calomel and ipecac will often afford relief. Bismuth and carbolic acid well flavored in a mixture as follows have often served me well in such cases:

Bism. subnit., ...	3i
Glycerit. ac. carbol., ...	f3ss
Sps. chloroformi, ...	
Tr. cardam. com., ...	aa f3iss
Aq. menth. pip., ... qs. ad., ...	f3ii

M. Sig.: Teaspoonful in water or lime water every two hours till relieved.

The failure of appetite is usually best overcome by lavage and the administration of pepsin and HCl, but in stubborn cases may sometimes be helped by tincture of nux vomica, gentian, quassia or columbo, and the Germans recommend very strongly condurango. I have recently seen the appetite and digestion both improved by five-grain doses of orexin tannate, taken an hour before meals. This remedy seems to increase the secretion of HCl.

To sum up: By far the most effective single method of treatment is lavage, which the majority of patients soon learn to tolerate without inconvenience, unless there coexists serious disease of the heart or blood-vessels. There are a few other contraindications which have been detailed elsewhere. Next comes diet. Third in the order of efficacy may be placed the copious drinking of warm water to wash the mucus downward, when the motor power of the stomach is good enough to render this safe. In the cases complicated with much motor insufficiency and still more with pronounced dilatation, intragastric faradization must take the third place, and sometimes, indeed, it can accomplish even more than lavage, though both are here often indispensable. Massage and special gymnastics should rank at least as high as fourth in curative power, and drugs internally administered are least effective of all, except to combat special symptoms.

Naturally, the combination of all the more valuable agencies, including especially lavage, diet, massage and gymnastics, offer the most promise of speedy cure, and spending several hours daily in the open air and sunshine in some healthful climate must in all cases contribute largely to effect that result.

SELECTION.

CORRECTION IN LATERAL CURVATURE.¹

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AND

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As lateral curvature is in the main a vice of position and attitude, the treatment is directed chiefly toward the correction of faulty position and attitude. This treatment necessarily depends upon the pathological conditions, which vary at the different stages of development and severity of the affection, and these variations may be described as follows:

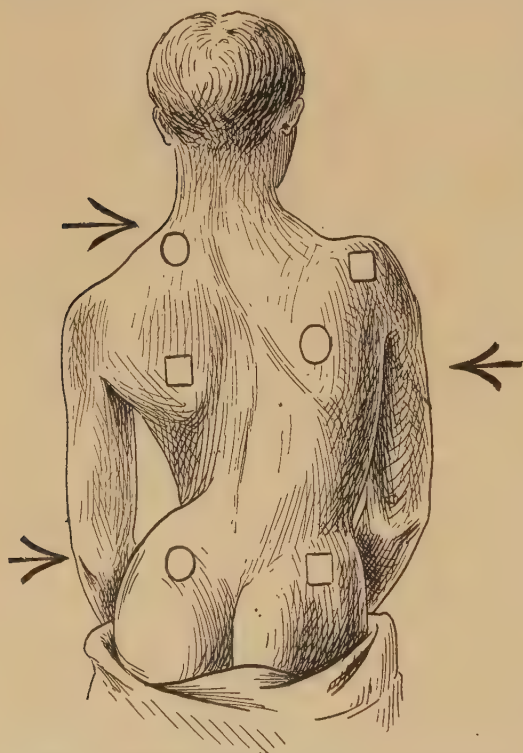


FIG. I. Indicating points of pressure, the square marks pressure in front and the round marks pressure behind.

(1) Faulty attitudes with absolute flexibility of the spine, and without structural changes of ligaments, cartilage or bone.

(2) A curved position of the spine with flexibility, except to a limited degree in certain portions where the normal flexibility is checked by slight structural alterations of muscles, ligaments, or cartilage.

(3) Curves with limited flexibility of the spine, and with structural changes of the ligaments and cartilages.

(4) Stiffness of the spine, the curve being fixed by structural changes in the ligaments, cartilages and bone.

When individuals have attained their growth, and there is evidence of marked bony change, treatment must necessarily be palliative, but in individuals that have not reached full growth, even if structural changes are present, treatment can be expected to be of service in proportion to the

¹ We are indebted to the courtesy of the publishers of the *Boston Medical and Surgical Journal* for the use of the illustrations in this paper. [Ed.]

amount of resistance to correction from the shape and structure of the bones.

The treatment in the first and second class would necessarily be largely gymnastic. In the second class the treatment should consist of gymnastics, supplemented by the use of measures for the increase of the flexibility of the spine, that is, the stretching of shortened, contracted ligaments. These methods of treatment have already been fully discussed in previous papers on the subject. In the third class of cases, where resistance and flexibility of the spine exist, owing to firm structural changes, treatment by gymnastics and flexibility exercises will not be sufficient, and for these cases mechanical measures have always been attempted. They have, however, never been thoroughly successful as corrective measures, largely owing to the mechanical difficulty that is encountered. The important problem, therefore, before the orthopedic surgeon, is the selection of the best possible means of exerting pressure directly upon the projecting positions of the trunk.



FIG. II. Jacket applied.

The large number and variety of corsets that have been devised, show the need of some method of treatment of the sort, but the great number of appliances used also indicate the lack of serviceableness and defects of most of them. It was supposed that the treatment by plaster jackets suggested by Sayre would be corrective, but the subsequent experience has shown that

although this method is of value in caries of the spine, its value is considerably less in lateral than in anteroposterior curves from caries. The reason of this is manifest from the fact that suspension as applied by Dr. Sayre does not sufficiently correct the twist of the spine seen in lateral curvature.

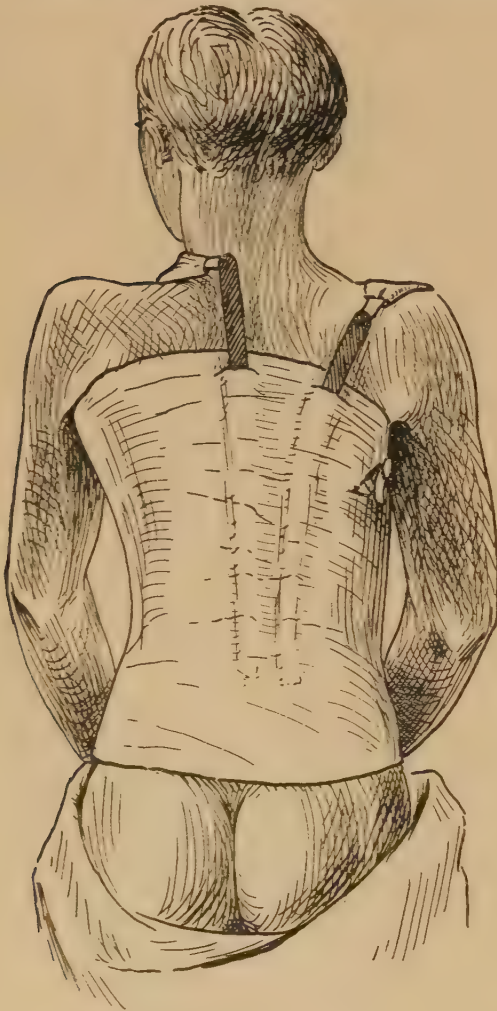


FIG. III. Jacket applied.

It may be frankly admitted that the difficulties presented by extreme curves may be insurmountable or may be only partially overcome. If more pressure is required and for a longer time than can be borne by the patient for the correction of the curves of the bone, or for adaptive changes in the muscles and ligaments, manifestly no correction can be made.

Conversely, however, experience has taught that if sufficient pressure is applied properly, faulty shapes of bone in growing children can be corrected in various portions of the skeleton, jaw and long bones, nor need this pressure be so severe as to be unendurable, provided it be constantly or continuously applied. Bone may be expected to grow straight, if it is prevented from growing crookedly. The softer the bone and the younger the child the more easily is the change produced.

Removable appliances are necessarily less efficient than fixed ones, owing to the difficulty of thorough adjustment after removal; and of fixed appliances, plaster-of-Paris corsets are more easily worn, and more readily adjusted than anything yet devised. It is, however, necessary that they should be applied in such a way as to exert and maintain the desired pressure, as long as it is considered necessary to maintain corrective pressure.

A plaster jacket as ordinarily applied in lateral curvature often slips on wearing and presses upon the concavity, injuring as much as it corrects, even if it corrects at all. It is manifest that the jacket should be applied with the patient corrected as far as possible, and with the patient kept in the corrected position, until the plaster-of-Paris is sufficiently hard to maintain the correcting pressure, and that this correcting pressure should be as great as can be borne without distress and applied in the best possible directions.

It is not the purpose of this paper to relate the details of the experience gained upon the subject. It will be sufficient to mention that the most feasible way of straightening the spine has been found to be by the removal of the superimposed weight by the recumbent position, rather than by vertical suspension, as the latter is less easily borne by the patient. It is also true that the use of an anesthetic in the correction for lateral curves has manifest disadvantages, and cannot be as frequently applied as is usually necessary for increasing correction in lateral curves.

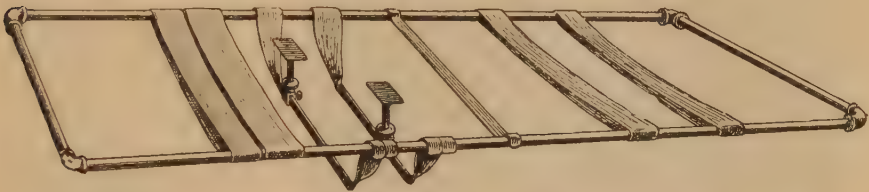


FIG. IV. Frame for the application of plaster jackets for correction of lateral curvature.

In cases such as are suited to correction by this method, if the patient is placed upon the back, with or without head and foot traction, the middle line of the trunk can be made straight. Furthermore, if the patient lies with the weight of the trunk supported only upon certain points, where upward pressure is applied, the sag of the unsupported portions of the trunk will serve to aid in the correction of the twist of the trunk. This correction of the twist may be aided by pressing upon the prominent portion of the distorted chest and thorax, using for this purpose hand pressure downward, during the application of the plaster, upon the front of the patient, while the supporting points on which the patient lies exert an upward pressure.

In the ordinary curves of lateral curvature the portions requiring correcting pressure in the back are, (1) on the projection of the shoulder, or adjacent part of the thorax, below the scapula on one side, and (2) on the opposite side above the scapula or at the back of the neck, and (3) in the lower portion of the trunk in the lumbar region on the side opposite to the prominent shoulder.

In front, correcting pressure is to be exerted (1) on the thorax at its prominent part on one side; (2), on the head of the humerus or acromial end of the clavicle, and (3) projecting pelvic anterior-superior spine on the other. (Fig. I.)

Pressure in this way can be applied without discomfort to the patient, if supporting rods bearing small, removable plates of aluminum (over which felt is laid) are placed under the recumbent patient's back at the required points, the head, pelvis and thighs being supported by cushions on a table, or by straps stretched across a gas-pipe frame. The plaster bandages are



FIG. V. Case III. before treatment.

applied as usual. Downward pressure can be made upon the thorax and shoulder while the plaster is hardening, and when the corset is firm the patient sits up, leaving the adequately padded aluminum plates incorporated in the plaster bandage, and exerting constant pressure. It is desirable that the plaster pass over the shoulder, close to the neck on the side of the projecting neck (that is, on the side opposite to the projecting shoulder), or that a strap attached to a steel be adjusted exerting pressure at this point. If this is not done, the corset will tip when the patient is erect, and the points of correcting pressure will be lost, the upper edge of the back of the corset pressing into the concavity of the curvature

in the back, and the full benefit of the correcting lost. The acromial end of the projecting shoulder is to be kept back by a padded strap. (Figs. II and III.)

A correcting force should manifestly be applied not beyond the point of easy endurance and the jackets should be frequently changed. The treatment should be continued as long as it is possible to obtain correction, after which a removable corset and gymnastic treatment is to be employed. (Fig. IV.)

A few cases will serve as an illustration of this method.

CASE I. Girl, sixteen years of age, with low curve, rotation, spine moderately flexible, has been weak since a period of rapid growth, and unable to carry out systematically any definite exercise. The attempt was made to wear a removable corset, but, owing to the child's condition, this was not successful, and the curve of the back had begun to increase. In view of this the plaster jacket was applied as a matter of trial, although it was felt at the time that possibly it could not be worn, but after two days it was found to be entirely comfortable and the patient much preferred it to any other form of treatment.

CASE II. Boy, thirteen years of age, has worn removable jacket and attempted gymnastic exercises for over a year, but attention to this has not been satisfactory, owing to the difficulty in making the boy carry out systematic treatment. There is a decided curve to the left in the lumbar region, with rotation, and slight curve to the right of dorsal region above.

Suspension or recumbency does not obliterate the deformity.

The jacket was applied and worn with perfect comfort, the boy meanwhile taking part in the sports of children of his age. The first jacket was worn for a period of nine or ten weeks. The condition of the back shows complete obliteration of lumbar curve, the upper curve unchanged. In this first jacket no attempt was made toward exerting pressure in the dorsal region of the upper curve.

CASE III. Girl, thirteen years of age, with a resistant curve, which has



FIG. VI. Case III. after two months' treatment.

been noticed for about a year, usual type, to the right dorsal convex with a small left lumbar convex curve. The curve did not disappear on suspension or recumbency, and there was a permanent rotation of ten degrees. This case presented an unusual degree of inflexibility in a patient of her age. Even by employment of considerable manual force in the recumbent position the curve could not be corrected.

The accompanying photograph shows the result in this case after the removal of the second jacket applied by the method described in this paper. In addition to the change in the condition to be seen in the illustration, an improvement in flexibility was noticed, so much so that with the child recumbent not only did the lateral deviation disappear, but there was improvement in the rotation, which by means of slight manual pressure was much more diminished.—*Boston Med. and Surg. Jour.*

Therapeutic Value of Section of the Sympathetic. At the last meeting of the Académie de Médecine, M. Franck (*Paris Corres. Med. Press*) spoke on his experiments on the section of the sympathetic nerve in the treatment of Basedow's disease, and the effect produced on the circulation of the thyroid body, on that of the brain, the ocular apparatus, and upon the head. The cervical cord of the sympathetic acts as the nerve of propulsion of the globe of the eye, thanks to its action on Müller's muscle; its section suppresses or attenuates exophthalmia. On the other hand, this nerve acted simultaneously as constrictor and dilator of the vessels; its section diminishes the tension intra-oculaire and can consequently have a beneficial influence on glaucoma. As to the supposed vaso-dilating action of the cervical sympathetic on the thyroid gland, it did not exist. Irritation of this nerve determines, on the contrary, contraction of the thyroid vessels, and its section consequently cannot do otherwise than add a paralytic vaso-dilatation to the active congestion of exophthalmic goiter. The vaso-constrictive cerebral action of the sympathetic is none the less apparent; it is thus that section of the cervical cord increases the cerebral blood current. The profit that could be derived from its section for Basedow's malady and for epilepsy was problematic, the theory of cerebral anemia in these two affections being very questionable. The cardiac nerves derived from the sympathetic are only furnished in a small proportion by the cervical cord, they derive for the most part from the superior thoracic region. Their suppression is consequently only complete in the case of total resection. Irritation of the aortic and cardiac branches, like that of the sympathetic, is capable of provoking a series of troubles in the circulation similar to the accidents of Basedow's malady.

REVIEW OF MEDICAL AND SURGICAL PROGRESS.

INTERNAL MEDICINE GENERALLY.

UNDER THE CHARGE OF

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Arterio-mesenterial Obstruction of Bowel at the Duodeno-Jejunal Junction, and its Causal Relation to Dilatation of the Stomach. Albrecht (*Virchow's Archiv.*, Band CLVI., S. 285) reports two very interesting cases of obstruction of the bowel which was brought about by traction upon the superior mesenteric artery. This vessel crosses over the duodeno-jejunal region of the bowel and between the latter and the pancreas, in its course from the aorta to supply the greater part of the small and large bowel. Now if the small bowel sinks into the pelvis through stretching of its mesenterial attachment from any cause, the position of the vessel in question is favorable to closure of the small bowel. The obstruction is only permanent, however, in those cases in which attachments have formed in the pelvis. Both conditions existed in the author's cases, *i.e.*, enteroptosis and pelvic fixation, the fixation in these cases being due to a high-grade dilatation of the stomach.

Nature of Acute Leukemia. Ramond (*Le Progrès Méd.*, Aug. 19, 1899), after commenting on the amount of interest which has latterly been focussed upon this subject, calls attention to the fact, that in spite of much work and numerous contributions to literature, its etiology is still a sealed book, though it is well defined, both as to its symptomatology and its lesions. As to whether it is infectious or toxi-infectious, or some neoplastic process confined to the lymphatic system? At present no answer to this can be given. The author is inclined to regard it as a disease peculiarly common to the Germans, since Ebstein and, later, Frankel have been able to collect 56 observations in a comparatively short time. I take it, however, that this is but another tribute to their scientific acumen. Indeed, the author himself goes on to say, though the affection is rare in France, it is not at all exceptional, and since it has become better known, contributions dealing with this disease have been multiplied. Nevertheless, it does seem that the

Anglo-Saxon race is more susceptible than any other. Etiologically, then, we know nothing; its symptomatology is more precise. Its course is that of an infectious malady, beginning often with fever, sore throat, muscular soreness, prostration, chills, anorexia, and soon after the cervical glands enlarge and increase rapidly, the glands of the mediastinum are quickly involved and, in rapid succession, all other lymphatic elements in the body. The liver and the spleen do not escape, but undergo considerable enlargement, diarrhea with very frequent passages and meteorism supervene, fever, active and continuous, hemorrhages from the gums and epistaxis. The urine contains considerable urea, uric acid and urates, and sometimes albumin and blood. In spite of treatment, its march is progressive and almost always fatal, the course extending over 3 to 6 weeks, rarely longer. It is scarcely necessary to point out the striking resemblance to an undeniably infective process, the blood examination alone failing to confirm that view. In this condition the erythrocytes are diminished in number and in hemoglobin richness, their form variable and some are nucleated. The leucocytes, on the other hand, are very numerous, perhaps as many as 500,000 per c.m.m., the striking feature being that this increase is largely made up by the large mononuclear leucocytes, and according as their protoplasm contains, or not, neutrophile granulations, the disease is designed myelogenous or lymphatic leukemia. This terminology was proposed by Ehrlich and Lazarus, who believe that the mononuclear neutrophiles have their origin in the bone marrow, the others in the lymphatic system. Be this as it may, however, the leucocytes are hypertrophied, their nuclei stain poorly and the protoplasm is small in amount and quite indistinct. They are devoid of movement. The other white-cell elements also suffer some changes, chiefly quantitative, however. The polynuclear leucocytes, which normally number 60 to 70 % of the total number in the blood, do not exceed 25 %. The lymphocytes and small mononuclear leucocytes are rather less than normal. Nothing in the above description of the blood changes suggests an infection. The presence of microorganisms or their products in the system, when producing any blood change, bring about an increase in the polynuclear leucocytes; and further, in all inflammations, the leucocytes maintain their proper dimensions. Here this is not the case, but the large mononuclear leucocytes are increased, their protoplasm and nuclei profoundly modified, and there is no resemblance to the nuclear and protoplasmic degenerations occurring in the course of certain infections. Further, the histological lesions are unlike those of an acute infection. In acute leukemia the enlarged glands present a hyperplastic condition of the normal reticulum, in the meshes of which are found numerous small mononuclear cells and a greater or lesser number of the large mononuclear variety, with or without granules, depending on the special form of the disease. The liver and kidneys do not present the round-cell infiltration so frequent in infections, but are more complex, being made up of areas resembling the lymphoid tissue of His. These areas—nodules—consist of fine reticula, holding numerous small cells in their meshes, and are to be met in most of the viscera, bone marrow, subcutaneous tissue and

intestinal walls. Anatomically, then, the disease is not an infection, and this is the most formidable argument advanced by the adherents of the neoplastic theory. Still it is possible that a hitherto undescribed micro-organism is the cause, or it may be a sporozoa. Hintze has described a coccus obtained from the blood, Powysotsky and Osterwald one in the enlarged glands; Frankel found in several cases staphylococci, streptococci, and a bacillus similar to that of Escherich. The dissimilarity of the findings in the presence of such a constant picture clinically, negative their specificity. It is quite likely that the organisms recovered were the cause of a secondary infection, having gained entrance to the circulation through the mouth, tonsils, or intestine. Numerous investigators have failed entirely to find any organism present, as the author, who tried to grow them both with and without oxygen, and in collodion sacs as suggested by Witschnikoff. Further inoculations were made into all the laboratory animals, including dogs, without result. All that can be said, as is the case with carcinomata, is, that clinically the disease resembles an infectious process, but no anatomical or experimental evidence has so far proved confirmatory.

DISEASES OF THE DIGESTIVE SYSTEM.

UNDER THE CHARGE OF

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The Relation between the Healthy and Diseased Portions of the Stomach. Soborow (*Bolnitsh. Gaz. Bot.*, Vol. X., No. 23) has conducted a series of elaborate experiments with a view of determining the vicarious activity of the healthy portion of the stomach under pathologic conditions, as well as the action of cold and heat on the gastric m.m. A dog in whom a portion of the stomach had been isolated, received 600 c.c. of ice-cream, and 52 c.c. of gastric juice was obtained from the isolated portion, whereas with ordinary milk the amount obtained was 46 c.c. On the same day the dog received a mixed diet consisting of 200 gms. each of bread, meat and water. The amount of gastric juice obtained was 114 c.c., this being $1\frac{1}{2}$ times the normal. On the following days the same diet gave 88 c.c., then 82, then 75 c.c., 76 c.c., 70, 65, 58, and finally back to normal (76 c.c.). This experiment shows that cold introduced into the large stomach produces in the isolated stomach, first, a hyper- and then hyposecre-

tion. When ice has been used the hypersecretion was preceded by a marked hyposecretion for several hours. This variation from the normal was at times accompanied by general disturbances, such as nausea and vomiting, but again, at others, no disturbance whatever has been observed, showing that in many instances marked disturbances of the gastric secretion may be unaccompanied by any external manifestations. Having established the normal proportions of the secretion of gastric juice in the isolated part and the rest of the stomach, the author proceeded to determine the variations of these proportions under pathologic conditions. He found that when the large stomach is in a state of hyposecretion the functional activity of the isolated portion is markedly increased, in other words, there occurs vicarious hypersecretion and *vice-versa*. The effect of very hot water has also been established. When the dog received 600 c.c. of water at 60°R. (75°C.) the secretion of the large stomach stopped completely for 13 days; the isolated stomach, on the other hand, showed a very marked hypersecretion. The reflex effect on the isolated stomach has been noticed. Thus ice, hot water and 10% sol. of nitrate of silver produced achylia in the large stomach and also a hyposecretion in the isolated stomach for several hours, the latter effect being due entirely to reflex action.

The Spleen and the Ferments of the Pancreas. Popelski (*Vratch.*, Vol. XX., No. 25) endeavored to settle the disputed question as to the role the spleen plays in the production of the pancreatic ferments. For this purpose he performed elaborate experiments on dogs and cats, which experiments led him to the conclusion that the spleen does not participate in the formation of the ferments of the pancreatic juice. The latter was not changed in its digestive properties after the removal of the spleen. The function of the pancreas, although depending upon the circulation, may nevertheless continue for a considerable period even after all its blood vessels have been tied. The work of the pancreas depends on the ingestion of food which, by means of the nervous mechanism, stimulates the former to activity. The theory of Schiff, who supposed that an intimate relation exists between the spleen and the production of pancreatic juice, is therefore proved to be incorrect.

Cancer of the Common Bile-Duct. Musser (*Univ. Med. Mag.*, Sept., 1899) reports an interesting case of the above affection, the prominent features of which were a moderate jaundice, not associated with pain in the region of the liver or gall bladder, painless and uniform enlargement of the liver and a freely movable mass, which was the distended gall-bladder. Emaciation was slight. Digestive disturbances were not very marked. Anorexia, nausea and fullness after eating, accompanied by flatulence, mostly intestinal, were present. Bowels were constipated, stools clay-colored, urine contained a trace of albumin. The duration of the disease was only seven weeks. The fatal issue resulted from an uncontrollable intestinal hemorrhage. Age of the patient was 54 years. The family history was generally good, except death of sister and aunt from cancer. Personal

history prior to last illness was excellent. The diagnosis during life was established by the gradual increase of the jaundice, complete occlusion of the duct, not due to gall-stones or any other mechanical obstruction, and exclusion of any other disease which might be responsible for symptoms. Autopsy confirmed the diagnosis.

On Some Diseases of the Stomach and their Diagnosis by Chemical Methods. Harley (*The Pract.*, Oct., 1899) describes in one of his clinical lectures the usual methods employed in gastric analysis, giving illustrative cases. In many instances a correct diagnosis could only be arrived at through a chemical analysis. The author also states that the majority of cases of so-called dyspepsia are undoubtedly of a neurotic origin. Cases of true catarrh are of comparatively rare occurrence and as a rule caused by some irritant, such as alcohol, excessive smoking, or highly seasoned food. Mucus and fatty acids in such cases are always present, usually in excess. Speaking of the treatment of hypoacidity, the author recommends the use of intragastric electricity, but the latter is successful only in the hands of skilled people. [High tension faradic currents applied with the intragastric electrode lessen excessive secretion and are very useful for hyperchlorhydria. In mentioning the methods employed in the physical examination of the stomach, the author fails to give the percussion method, which is very useful not only in outlining the boundaries of the stomach but also in determining the motor power.—ED.]

NEUROLOGY.

UNDER THE CHARGE OF

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An Investigation upon the Plantar Reflex, with Reference to the Significance of the Variations under Pathologic Conditions; Including an Enquiry into the Etiology of Acquired Pes Cavus.

James Collier (*Brain*, Vol. XXII., No. 85, p. 71) publishes an interesting paper on the plantar reflex. Babinski has found that in some cases the flexion of the toes upon the metatarsus, occurring in the normal plantar reflex, is replaced by extension of the toes. This phenomenon was found by him only in those cases—excepting new-born infants—in which lesions existed in the central motor tract. The extension of the toes, according to Babinski, never occurs in normal adults, or in functional disease, and is the earliest sign, and may be the only sign, of lesion of the pyramidal tract. Collier confirms the statements of Babinski, Van Gehuchten and Brissaud in all essential points. He believes that the “extensor response,” as he calls

it, is found only when a lesion of the pyramidal system exists, and consequently is a sign of great clinical value. In cases of total transverse lesion of the spinal cord, the extensor response is the only reflex phenomenon present in the lower limbs. The flexor response is obtained in functional cases, when any plantar reflex is elicited. Collier finds also that the pes cavus, frequently found in lesions of the pyramidal system, is intimately associated with the "extensor response" in the plantar reflex, and is produced by a state of reflex hypertonicity preponderating in those muscles which respond most vigorously in the plantar reflex. In all such cases of pes cavus, evidence of increased tone in certain muscles can be demonstrated. The theory that the pes cavus of spastic conditions is due to weakness of the *interossei* is not justified. [It may be added that the "extensor response" is not held by all investigators of the plantar reflex to be absolutely pathognomonic of lesion of the central motor tract.]

MEDICAL DISEASES OF THE KIDNEYS.

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Notes on a Case of Hematuria from Healthy Kidney. Myles (*Med. Press and Circ.*, Aug. 23, 1899) reports the case of a woman 26 years old. Operated on for hemorrhoids in 1898 she shortly after began to suffer from recurrent attacks of pain in the middle line and on the left side of the abdomen, travelling down to the thigh, the attack simulating renal colic, and thought it was due to indigestion. At the later stage of the disease the pain was practically constant, though never agonizing. Accompanying this were hematuria, progressive emaciation and anemia, the loss of weight amounting to 28 pounds in 2 months. On palpating the abdomen, both kidneys could easily be felt and moved, particularly the left. The right kidney gave no pain on palpation; over the left great suffering was complained of on pressure downward and forward. The urine contained almost pure blood. No tubercle bacilli were found, and the urine, when free from blood, was practically normal. On examination of the bladder by the cystoscope it was seen that there was bleeding from the left ureter. It was decided that if medical treatment did not relieve the condition an operation should be done. Two months after her first visit she was operated on and

the kidney was fixed. This did not relieve the hematuria, and the kidney was removed. On examination of the kidney by the naked eye abnormalities of most importance were in the pelvis, where the mucous membrane was red, thickened and pulpy, covered with minute papillaeform elevations and rugae, which gave its interior a curiously rough appearance. Microscopic examination revealed myxangiomatous changes in the submucous tissue of the pelvis of the kidney and this was thought to be responsible for the hematuria.

A Case of Primary Renal Tuberculosis of Twenty Years' Standing. Frank (*Med. Rec.*, Sept. 9, 1899) cites a case of a woman who was treated for cystitis for the last 20 years. She had, off and on, frequent urination, pyuria, polyuria, burning and hot feeling in the back. Had two or three attacks of colicky pain, followed by inflammation of the urethra and a rise of temperature. Diagnosis of inflammation of the kidney was made. No history of calculi. On catheterizing the ureters a small amount of normal urine was collected from the left kidney. From the right kidney no urine could be drawn. On microscopic examination of the urine there was found an abundance of pus and epithelial cells. A part of the sediment was stained and tubercle bacilli were found. The diagnosis of tuberculosis of right kidney was made upon these facts and the absence of signs of tuberculosis elsewhere. On operation the right kidney was removed, together with a greater portion of the ureter, and found to be diseased. The woman has not been seen for a year, and at last account was in good health.

The Urino-Glucosometer. Stern (*St. Louis Clin.*, May, 1899) advocates the use of the urino-glucosometer instead of the copper tests in the examination for sugar in the urine because of the following substances which are known to reduce the copper: (a) Uric acid, the urates, creatine, hypoxanthin, hippuric acid, indican, alkapton, alkaloids, tannin, gallic acid, pyrogallol, camphor, copaiba, cubebs, some other carbohydrates, etc. (b) Albumin, parapeptone, peptone, creatin, salts of ammonium, etc. He thinks that the Robert's fermentation method is the best, and has devised a little apparatus for the more practical and convenient application of this quantitative test.

DERMATOLOGY.

UNDER THE CHARGE OF

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An Endemic of Pemphigus. Marx (*Med. Rev.*, St. Louis, Sept. 30, 1899) reports a series of cases of contagious pemphigus starting in a 3-days-old infant, and spreading to other members of the family. The infant was well until the third day, when it developed a vesicle upon the scalp and

another upon the abdomen, the latter enlarging in the course of 24 hours to the size of a dollar. At this time the child nursed poorly and had green stools: temperature, 99.4° . Five days later the lesion, which had been slowly spreading, extended with tremendous rapidity, the erythema spreading from the edges of the old bullae and a continuous lifting off of the epidermis occurring. The back, face and chest were extensively involved, the back being entirely denuded: the epidermis hung in ribbons from the hands. Temperature, 103° . Death occurred upon the ninth day of the disease. On the sixth day of the child's illness the mother developed bullae from the size of a pea to a dollar, first upon the mammae, then in the groin and later scattered over the body. On the day of the baby's death, it was found that the nurse had some vesicles on the side of her neck, against which she had been in the habit of holding the child. The father contracted a large vesicle upon the forehead, and his three boys all developed mild forms of the disease. The physician herself had a vesicle appear upon the left forearm, which lasted a week. [This disease is designated by some pemphigus contagiosa, but more properly belongs to the impetigo group. True pemphigus is a far more serious disease, and is not transmissible from one individual to another.—J. F. S.]

Finsen's Phototherapy (In the Treatment of Lupus). Bie (*Phila. Med. Jour.*, Oct. 7, 1899) describes the treatment of lupus and certain other bacterial skin diseases by concentrated rays of light, as employed by Dr. Finsen in his "Medicinske Lysinstitut," in Copenhagen. The experimentally proven data upon which the method is founded are: (1) The bactericidal property of the chemical rays of light: (2) the power of the chemical rays to produce an inflammation of the skin: (3) the power of the chemical rays of light to penetrate the skin. Finsen found that on days of bright sunshine in July and August in Copenhagen, the sunlight killed the bacillus prodigiosus in plate cultures within $1\frac{1}{2}$ hours. In order to obtain more rapid action, the light must be concentrated. Concentrated electric light from an arc lamp of 25 amperes was found to kill bacteria, when spread in a stratum of agar about $\frac{1}{2}$ m.m. thick, in a few seconds. About 350 cases of lupus were treated. The earlier patients were treated by the light alone; the same was done with all mild cases. The more serious cases were treated with a pyrogallic acid ointment, in order to make the skin smooth and as easily penetrable as possible. In none of the cases was the treatment quite without effect, but in about 5 cases the improvement was very slow. In all the 350 other cases the result of the treatment was satisfactory. From the moment improvement begins it is without interruption until the last nodule of the lupus patch has disappeared. "In all of the 350 cases this result has been so certain and so constant that there is every reason to doubt the accuracy of the diagnosis of lupus vulgaris when this mode of treatment appears to be ineffective." Finsen makes use of sunlight in the summer months, and a 50 to 80 ampere arc lamp during the rest of the year. The light is concentrated (in the case of sunlight) by passage through a lens of about 20-40 c.m. diameter. In order to avoid burning the skin, there is

placed between the two glasses of the lens a weak ammoniacal solution of sulphate of copper, which filters out the heat rays. The electric light is made to pass through a series of lenses in a telescopic tube, distilled water being here interposed to absorb the heat. The lenses are made of quartz, because this material in a far higher degree than glass allows the ultra violet or chemical rays of shortest wave length to pass through. The skin must be still further cooled to avoid burning. This is effected by a little apparatus consisting of a plate of quartz and a lens of the same material, through which cold water is allowed to flow. This is pressed down upon the skin by a rubber band attachment, thus making the skin anemic and favoring the penetration of the light. In this manner an area of skin $1\frac{1}{2}$ c.m. in diameter is treated each day for one hour. The area treated becomes red and swells, a bulla may appear, but necrosis has never been observed.

Troublesome Vesicular Eruption Cured by Circumcision.

Bulkley (*Jour. Cut. and Gen.-Urin. Dis.*, Oct., 1899) reported the following case to the New York Dermatological Society. Ten years ago he had had under his care a physician with a chancre on his finger. His wife had also been infected. Subsequently they had had a healthy child. About 3 months ago, the child, aged 4 months, had come to him with an itching vesicular eruption upon the legs and abdomen. Syphilis was excluded at once and the affection regarded as a reflex herpes. No other cause but a long and adherent prepuce could be found. Circumcision was therefore advised. Within three weeks after the operation all trace of the eruption had disappeared. The eruption had previously lasted 4 months, and had resisted all local treatment. There was no recurrence. Bulkley stated that it was one of the most striking instances of reflex eruption that he had ever encountered.

THERAPEUTICS.

UNDER THE CHARGE OF

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Sulphonal Poisoning. Gulland (*Scot. Med. and Surg. Jour.*, April, 1899), in an exhaustive paper, calls attention to the fact that the majority of people believe this drug a perfectly safe one. He mentions an acute fatal case of a woman, where 30 grs. were taken and death resulted in 40

hours. The chronic forms he considers more dangerous, as in acute forms active treatment usually saves the case: chronic cases, with the symptoms pronounced, rarely recover. Constipation favors poisoning, as the drug is rather insoluble and remains in the intestinal tract for some time, thus being slowly absorbed. It should not be given in cases where there is great prostration, weak heart or kidney lesion. The maximum dose for a man is 30 grs., for a woman 20. It should never be given continuously; at least 3 or 4 days should intervene. Trianol, he believes, is safer, and not so liable to produce the chronic forms of poisoning as sulphonal, for it requires less and is more soluble. Chemically, trianol is a modification of sulphonal (diethyl-dimethyl sulphone-methane) where one of the methyl radicals has been displaced by an ethyl. The deep red urine is due to the elimination of hematoporphyrin and generally contains unchanged sulphonal.

Notes on the Treatment of Severe Chorea by Sulphocarbolate of Sodium. Wilson (*Birmingham Med. Rev.*, July, 1899) found that this drug produced such a marked change in a case which he thought could only terminate fatally, and, it being rather rare to see severe cases, he did not deem it wise to wait until he could collect a series of these before reporting it. He administered 20 grs. every 2 hours in conjunction with 1 or 2 grs. of quinin in alternating doses. Cardiac depression was expected, but not noted. The author was induced to use the drug for its antiseptic properties. Chloral and hot packs were also used. Nourishment was pushed, such as pancreatized raw meat juice, milk, etc.

Treatment of Erysipelas by Carbolic and Camphor. Schweler recommends (*Medicineskoie Obozrenië*, 1899, No. 4) for the treatment of erysipelas a mixture of chloral, 1 part, and camphor, 3 parts; this forms a transparent, rose-colored liquid, with the specific gravity of 0.999. It is applied to the surface every 3 hours, depending upon the part affected. The author treated 33 cases—26 being of the face. No gangrene, abscess, cellular degeneration or renal complications were noted in any of the cases. High temperatures rapidly fell, and in some the course of the disease was rapidly terminated.—[*Rev. de Ther. Méd. Chér.; Gaz. des Hop.*, Vol. LXXII., No. 75.]

Carbolic-acid Gangrene. Brougham (*Med. Rev.*, Jan. 21, 1899) reports 2 cases which came under his own observation; the first, a woman, 17 years of age, who applied a 3% carbolated salve to a trifling wound of the finger; it caused burning that kept her awake, and the following morning the finger was gangrenous. Second, a man, 56 years, applied a solution and compress of unknown strength over night; next morning the skin over the part was gangrenous. He has gathered about 45 other cases in literature and gives several others in detail.

CLIMATOLOGY AND HYGIENE.

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"Climate-cure" in the Treatment of Incipient Phthisis.
Taylor (*Med. Times*, Aug., 1899) justly reprimands the custom of physicians to send away their tuberculous patients to some "climate" without due consideration of the patient's habits, financial circumstances, etc. A climate without proper hygiene or diet will accomplish nothing. A bad boarding house will nullify the effects of the finest climate. Change of climate is very often of the greatest benefit to phthisical patients, and this seems to be intimately associated with elevation above tide water, though there are many localities with no considerable altitude where a good effect is often exerted upon the disease. The matter of choice of climate is exceedingly difficult. It is impossible entirely to determine the nature of what might be called "climatic idiosyncrasies" in patients. We are therefore obliged in the choice of a climate for a patient to follow certain rules. First is to be investigated the individual susceptibility to cold and heat, respectively. We must carefully inquire whether the patient is always chilly in winter or whether he is exhausted and depressed in summer. It seems to be folly as well as cruelty to compel an anemic, emaciated individual, who is always chilly and whose circulation is feeble at the best of times, to spend a winter in a cold, bleak, windy, northern climate. While the Adirondacks in winter are certainly of benefit to many, it would seem almost proven that they cannot but disagree with others; in fact, experience proves that they do. On the other hand, there are many patients to whom even the early spring warmth of Florida is invariably depressing, and who reap no benefit from sojourning there. It is, after all, hygiene throughout, which we must keep in mind, and not merely the effect of a certain climate upon the lung alone, as though it did not belong to the body. Another factor of some importance in selecting a locality is a knowledge of the diurnal range of temperature.

The annual average temperature and the average for each month can usually be ascertained without difficulty for the more frequented health resorts, but the daily variation is not so easily to be learned, and yet it is on just this factor that the comfort of the patient may depend. A perfectly equable temperature is certainly of great advantage. Unfortunately, it is not so apt to be found in dry air and elevation above the sea as it is at lower regions. Still another matter is the nature of hotel accommodations and other comforts: and this has to be considered most carefully in reference to the individual. Though a strong man with beginning phthisis, which has had but little effect upon his general health, may do well if sent to a region where he will spend his days in the saddle and his nights in the open air, it is clear that for women and many male patients no such regime can be prescribed.

Enteric Fever in India. Claxton (*Ind. Med. Rec.*, Vol. XVI., No. 18) points out the frequency of typhoid among the newly arrived British troops, and the comparative immunity to this disease enjoyed by the natives. This marked difference in susceptibility he ascribes to the following conditions: (1) The soldier comes out to India at the period of his greatest susceptibility. (2) The liver, partly from the effects of a hot climate, and partly from the too free indulgence in highly seasoned animal food and alcoholic beverages, becomes over congested, diminishing the resisting power of the organism. (3) The eliminative functions of the skin are largely hampered by unsuitable and over-abundant clothing. The Hindu, on the other hand, is practically a vegetarian, and his drink is pure water. The liver and all other emunctories are not overburdened, and perform their functions properly. The light clothing worn by the natives, and in many instances the adoption of nature's garb, permits free action of the sweat glands. As to the origin and mode of spread of the disease the author adheres to the theory that Eberth's bacillus, as a distinct species, is the specific cause. The infection is usually carried by water, and may be traced to any or all the following sources: (1) To fissures caused by excessive drought. (2) To the subsidence of the soil and its porosity. (3) To the natives engaged in water-works not being particular where they attended the calls of nature. (4) To the agency of frost; the typhoid germ being ejected, after a lengthened period of confinement, by heavy rains and the accompanying thaw. (5) To lowness of wells, combined with great heat. (6) To the water derived from the surface drainage of cultivated manured lands. (7) To the sand and gravel used for filters being obtained from infected sources. Outbreaks might also be traceable to contaminated food supplies—thus water, which have drunk sewage-infected water, have been known to affect their milk. Prof. Hankin traced an outbreak in the East Surrey regiment to infected "dahi" and in 1894 an outbreak, which occurred at Meerut amongst the members of the Army Temperance Association, was traced to the half-baked banana cakes, the bacilli which occupied the centre of these cakes being derived from injury by the hot heat. Animals and insects have been known to contract this disease; prairie dogs do so through their dejecta, and flies by moving indiscriminately from one kind of food or filth to another.

SURGERY.

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Antistreptococcic Serum in Erysipelas. Bond (*Med. Press*, Sept. 27, 1899) reports four cases of facial erysipelas, the recovery from which seemed to be materially aided by the use of the antistreptococcic serum. The serum was given daily in doses of 10 c.c., and injected into the anterior abdominal wall. In these 4 cases the success of treatment is believed to have been marked.

The Reflux of Air into the Ureters. Kelly (*Amer. Jour. Obstet.*, Oct., 1899) has witnessed air bubbles escaping from the ureteral orifice not less than 12 times in examining the air-distended bladder with the patient in the knee-chest posture. This was usually due to the entrance of air into the ureter from the bladder, although in one instance it resulted from the presence of a gas-forming bacillus in the kidney. While this observation indicates that the ureteral orifices are not air-tight under all conditions, it does not prove that they are not water-tight under physiologic conditions. The escaping bubble of air is of value in locating the ureteral orifice during cystoscopy. No ill effects from this entrance of air have been observed.

A New Operation for Inguinal Hernia. Beck (*Med. News*, Sept. 16, 1899) describes a new method of fortifying the abdominal wall in inguinal herniotomy that he has employed in 3 cases. An incision is made along the outer margin of the rectus muscle, exposing its lower third. The hernial sac is isolated, ligated and cut off within the internal ring. A muscular flap, consisting of the outer third of the rectus muscle, is now turned down. This flap has its apex near the junction of the inferior and middle third of the rectus, and its base below, and is fastened (by cat-gut) to Poupart's ligament upon one side and the conjoined tendon upon the other. The cord is placed upon this muscular flap and is in turn covered by uniting the cut aponeurosis by a continuous suture. The muscular gap above is obliterated by uniting the cut edge of the rectus to the local abdominal muscles.

Localized Tuberculosis of the Intestine. Mayo (*New York Med. Jour.*, Aug. 19, 1899) gives the history of 7 cases of localized tuberculosis of the intestine. Despite the serious nature of the operation and the fact that

some of the patients were operated upon a second time, but one of the patients died. The first operation consisted of the separation of adhesions and drainage for a localized tuberculosis of the ileum. A fecal fistula followed, which was relieved by Dupuytren's operation, with the complete recovery of the patient. The second patient had intestinal obstruction from tuberculous ulceration of the ileum. Four inches of ileum were excised, an end-to-end anastomosis made and fistulous openings of adherent intestinal coils were repaired. Despite a transient fecal fistula, perfect health resulted. The third patient had tuberculosis of the sigmoid and uterine appendages. During the separation of adhesions both bladder and ileum were opened. These tears were immediately repaired and the uterine appendages removed. Death from septic peritonitis resulted. In the fourth patient the process involved the caecum, the appendix and the right ovary and tube. The appendix, right uterine adnexa and a portion of the caecum were excised and a retrocaecal tuberculous pocket cureted and drained. The patient improved, but 6 months later an ileocolostomy was necessary for intestinal obstruction. The patient was afterward discharged in good condition. The fifth patient had tuberculosis of caecum and ascending colon with tuberculous abscess formation. An opening of the bowel was repaired and the abscess cavity drained. Four months after operation there had been a gain of 30 pounds. The sixth case was one of tuberculosis of the sigmoid, causing stricture. The appendix was first removed. Four months later there were grave signs of intestinal obstruction. The sigmoid stricture was dilated and a secondary enterostomy and colostomy performed. The patient is rapidly improving. There was tuberculosis of the caecum and appendix in the seventh patient. The appendix was removed with a portion of the caecum, and improvement has resulted.

LARYNGOLOGY AND RHINOLOGY.

UNDER THE CHARGE OF

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Surgery of the Fistulae of Steno's Duct. Critical Study of the Operative Procedures (in the New Method of Professor Princeteau) (*La Chirurgie des Fistules du Canal de Stenon. Etude Critique des Procédés Operatoires*) (*nouveau Procédé de M. l'Prof. Agrégé Princeteau*). Baillif (*Thèse de Bordeaux, 1899*) reduces all the different procedures for the cure of fistulae of the parotid canal to five principal methods: (1) Simple occlusion of the fistulous orifice; (2) atrophy of the gland; (3) re-establishing the natural canal; (4) formation

of an artificial canal; (5) transplantation of the canal. The first method consists in closing the orifice of drainage. This can be accomplished by caustics; or by the suture, after freshening the edges of the fistula and cauterizing them; by autoplasty, as it was done by the elder Berard, and last by compression. To obtain atrophy of the parotid glands three different methods may be employed: (1) Ligature of the duct of Steno; (2) its obliteration by a foreign body; and (3) by irritant injections forced in the gland. The method of re-establishing the natural passage may be accomplished either by the seton, which has been the proceeding employed by Louis and Morand, or by the canula, a method favored by Berard. The fourth method is that of formation of an artificial canal, and is the one most often employed. There are two procedures: First, single puncture by the methods of Deroy, Mouro, Desault, Duphœnix, or Richelot, or the double puncture invented by Deguise and modified by Beclard. The fifth method is that of transplantation, invented by Langenbeck, of Berlin, and adopted by Princeteau with some modification. The first step of this operation is a mapping out of the points to be repaired. Incision, followed by a search for and isolation of the posterior border of the duct of Steno. The second step is the toilet of the posterior border of the duct of Steno. The third step comprises puncture of the masseter, transplantation and fixation of the posterior border. Despite the efficiency of this procedure, it does not follow that it should be employed to the exclusion of all others, but the author believes that only those cases in which transplantation would effect a cure should be preferred to it. In all cases two portions of the duct of Steno should be taken into consideration; one intraglandular and the other extraglandular. The latter can be divided into a masseter and buccinator. Princeteau's method is indicated in the cases of fistula in the buccinator region and is also very practicable in fistula in the masseter division.

Treatment of Ozena by Citric Acid (Die Behandlung der Ozaena mit Citronensäure). Hamm (*Munch. Med. Woch.*, No. 15, 1899) treats ozena with citric acid in the following way. The patient uses every morning a nasal douche, and frees as far as possible the nasal fossa from pus and crusts. He then insufflates three times a day into the nostril a powder composed of citric acid and sugar of milk, equal parts. The deodorizing action of the citric acid is so strong that it causes all odor to disappear, even when the powder is insufflated without the previous cleansing from pus and crust. The odor disappears immediately, and does not reappear after the insufflations have been discontinued for some days. Finally, the secretion is even found diminished. The author has observed a case of cure having lasted for some months. The odor gradually reappeared again, to disappear anew under the influence of the citric acid. This treatment exercises a favorable action on the general condition, especially in young women with anemia and failing appetite, symptoms due in most to a psychic depression which this odor produces and thus renders their lives almost intolerable. When the odor is removed, the patients take courage, become more cheerful and eat with a better appetite.

The Choice of Sea Waters and Mineral Waters in Chronic Affections of the Upper Respiratory Tract (*Die Wahl des Badeortes resp. des Mineralwassers bei den Chronischen Erkrankungen der Oberen Luftwege*). Linkenheld (*Deuts. Med. Zeit.*, No. 15, 1899) says that concerning the chemical and thermal properties of mineral waters not only the condition of the pharynx should be taken into consideration, but also the digestive tube. This latter should be always thoroughly examined, and if the catarrh of the pharynx is purely local and the digestive tract is found in the normal condition, warm alkaline waters can be prescribed with success. If, on the contrary, the affection of the pharynx is due to a chronic intestinal condition, such as chronic constipation, cold sulphur water should be prescribed. As regards the temperature of the waters, a very warm water should not be prescribed for fear of increasing the chronic hyperemia which exists as a rule in these affections of the upper respiratory tract. Cold water should be prescribed in dry catarrh, and as dampness plays a greater or less role in cases of this type, the patient should be sent to the seashore. We should not be contented with the internal administration of the waters alone, but they should be given in the form of inhalations and douches, either hot or cold, or alternately hot and cold, according to indications, as in this way the best results are obtained. The chemical constitution of the water seems to have little importance. Ordinary water will render as good service as that containing a large percentage of mineral salts.

OPHTHALMOLOGY.

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Massage and the Relief of Eye-strain in the Treatment of Glaucoma. Gould (*Phila. Med. Monthly*, Oct., 1899) reports several cases of glaucoma in which these measures produced the most satisfactory results. It is not expected that inflammatory and atrophic changes induced by long-continued excess of intraocular tension will be remedied, nor is the beneficent effect of iridectomy denied, but it is claimed that in the early stages of glaucoma, and in advanced cases in which operation is not available, the proper correcting lenses and massage are of the greatest therapeutic value. Gould's technic of massage is simple, but requires delicacy of touch and intelligence on the part of those who carry it out. If the patient has these qualities, she may be instructed in the art. If not, some friend or professional nurse must be taught. The soft parts of the ends of the fingers or thumbs are used and through the closed lids. He begins with alternate palpation by two fingers, exactly as in estimating tension, but much more slowly. All pressures and movements should begin and proceed to the extreme, very slowly and softly; the release or lessening of pressure may be a

little more quick, but never sudden. The depth of the denting or the force exerted will depend on the hardness of the globe. In high tensions greater pressures are safe. When the tension under massage approaches the normal, as it will do, the force exerted will be lessened to that which would produce clear discomfort if one's own or the normal eye were pressed. The patient's judgment of the matter must be consulted, and will not be far wrong—an added reason for making the patient the operator when the intelligence and self-control will warrant. Palpation should be through the upper lid with the eyeball in the positions of extreme adduction, normal forward looking, extreme abduction, and extreme depression. In extreme elevation the lower lid is used. Each position must be ordered systematically while massage is being carried on (the position of the other eye may be observed as a guide); in this way fully three-fourths of the globe is operated upon. The length of the sitting depends upon the time required to bring about normal tension, which is usually from 3 to 5 minutes. Sometimes normal tension will not follow so soon. Gould has yet to see any considerable bad results, such as conjunctival hyperemia, although patients have sometimes alluded to the fact that there was some irritation or discomfort following long-continued or too rough manipulations. He alternates the alternate palpation with two fingers with shorter rolling or rubbing movements (*effleurage*), carrying the lid so far as easily movable with and beneath the finger around the equatorial regions of the globe. Gould believes that the fundamental cause of glaucoma in a large majority, if not in all, cases is long-continued, pre-existing eye-strain, spurred beyond resistance by presbyopia. Hence the primal prophylactic as well as therapeutic measure is relief of eye-strain, not by antediluvian or optician methods of refraction, but by skill and exactness that approximate that used to calculate eclipses or test a chemic reaction.

Nitric Acid as a Cautery in Corneal Ulcers. J. S. Johnson (*Amer. Jour. of Ophthalmology*, July, 1899) believes that nitric acid meets the requirements of a desirable corneal cautery, viz., it produces the desired destruction of necrotic tissue and stimulates to reparation; its action is under perfect control; it does not leave an opaque cicatrix; it is painless, and the reaction is moderate; it is inexpensive and easily obtained. Johnson has employed nitric acid as a cautery for 10 years in many cases with the best possible results. His method is as follows: He makes a dilution of the chemically pure acid varying in strength from 9 to 15 %, according to the effect desired. He shapes a piece of soft wood to a point suitable to the case. This he dips in the dilute acid, and withdraws, being careful that no excess of liquid adheres to the stick. The cornea is cocaineized, and the point is deliberately applied to the ulcer until the destroyed tissue turns white. The eye is then washed with water or a saline solution. The application is painless and reaction is moderate. The cauterization may be safely repeated if necessary. The separation of the slough is speedy, and the ordinary after-treatment is indicated.

The Treatment of Ophthalmia Tarsi. Phillips (*Brit. Med. Jour.*, Feb. 18, 1899) believes this disease to be distinctly eczema of the lid, and

states that pustular eczema often co-exists on the beard, eyebrows or temporal scalp. He emphasizes the importance of the oleate of mercury ointment in the treatment of all forms of blepharitis, and claims that it is more penetrating than the insoluble oxid generally used. He employs a 1 % ointment, the base being paraffinum molle, and, in order to secure intimate mixture, the oleate and paraffin are best melted together. The ointment may then be considered an unirritating disinfecting, penetrating, soluble salt of mercury. Not only the margins, but the surface of the lids should be anointed, and the treatment should be persisted with at night long after apparent cure. For the hyperemia of the early stages, and for the removal of crusts, hot boric acid lotion is used.

An Abortive Treatment of Gonorrheal Ophthalmia. Jamison (*Med. Rec.*, June 10, 1899) describes an abortive treatment by a cantholysis and thorough application of silver nitrate, 40 gms. to the ounce. He believes that even in cases of doubt, when bacteriologic examination is not obtainable, this treatment is advisable, for if the case is gonorrheal a severe disease will be aborted, and if it is simple acute catarrhal conjunctivitis the reaction, while great, lasts only a few hours under the vigorous use of iced cloths. The treatment is conducted in the following way: Cleanse the eye thoroughly with a solution of boric acid; take a strong pair of scissors, preferably straight with blunt points, placing one blade beneath the palpebral conjunctiva at the outer canthus, making the cut directly outward through the skin and conjunctiva. Then, grasping the upper lid with the other hand, pull it forward and upward; in doing this you put the tarsal ligament on the stretch, and it can readily be found between the skin and palpebral conjunctiva. This is cut by a smaller pair of scissors, and then the upper lid becomes loose and the surgeon is enabled to expose thoroughly the upper conjunctival cul-de-sac and so to lessen the pressure on the lymphatics supplying the cornea. Should there be much swelling and chemosis following the application it is not necessary to stitch the edges of the wound together, as only a temporary effect from the operation is desired. The application of nitrate of silver (gr. xl to $\overline{5}$ i) should be made with a small pledget of cotton on an applicator, the surgeon being careful not to touch the cornea. Immediately neutralize the silver with a solution of sodium chlorid, then begin the application of iced cloths, changing them every 10 seconds until the reaction has subsided; in the meanwhile the eye is kept clean with a saturated solution of boric acid. It is rarely necessary to make a second application in 24 hours. In the cases so treated by Jamison there was but slight discharge on the second day, and the reaction subsided rapidly under the vigorous use of iced cloths. The small operation on the external canthus (cantholysis) is done with slight pain to the patient by the subcutaneous injection of a 4 % solution of cocain, and as the result of this treatment depends entirely upon the thorough application of silver, Jamison considers the preliminary operation very essential, as it enables the surgeon thoroughly to expose the conjunctiva, which is otherwise impossible.

GENITO-URINARY SURGERY AND VENEREAL DISEASES.

UNDER THE CHARGE OF

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Therapy of Suppurating Inguinal Lymphadenitis. Brandl (*Allg. Wiener Med. Zeit.*, Aug. 29, 1899) advocates free incision, curetting, injection into the abscess cavity of iodoform, glycerin, iodovasogen, or airol emulsion, and loose gauze packing. In cases of unilocular abscess cavity Lang's procedure of minute incision and injection of a 1% silver solution is advised.

Gangrene of the Male External Genital Organs. Petit and Merklen (*Gaz. des Hop.*, Aug. 12, 1899) offer a classification of this form of gangrene, giving four groups according to the causes, *i.e.*, gangrene of urinary, genital, and general (from dyscrasia, infections, trauma) origin, and spontaneous fulminating gangrene. Gangrene of urinary origin follows traumatism and strictures, with a development of bacteria in the extravasated blood and urine, and presenting symptoms of a rapid relief from previous retention of urine with the appearance of a perineal tumor rapidly becoming gangrenous, involving penis, groins, or abdominal walls, and accompanied by symptoms of sepsis. This group demands a conservative prognosis. Gangrene of genital origin follows paraphimosis and venereal ulcerations, especially chancroids, with gangrene of the prepuce and symptoms of severe general infection, but having a favorable prognosis. Gangrene depending on general diseases complicates diabetes, malaria, typhoid fever, scorbutus, and other states, but presents no special characters. The prognosis is conservative. Spontaneous fulminating gangrene is probably due to a virulent streptococcus infection, has a mild beginning and suddenly develops into a gangrene tending to involve all the external genitalia and giving rise to severe general symptoms. Treatment consists in the use of the thermo-cautery, free incisions, removal of mechanical obstacles to the circulation, and attention to the general condition.

A New Method of Drainage of the Urinary Bladder, with Prevention of Urinary Infiltration after Suprapubic Cystotomy. This method, given by C. Kaczowski, depends upon the application of an apparatus consisting of a rubber balloon and a Bunsen aspirator. The balloon consists of a lower part which is placed within the bladder, and an upper

part which is placed so as to be partly between the edges of the wound and partly lying on the outer surface of the abdominal wall. Both parts communicate by means of a thin shaft. Through the whole ball passes a stiff-walled tube of large caliber, which, after emerging from the lower part of the balloon, is bent forward. On this curve is a lateral opening. After *sectio alta* the collapsed balloon is placed in the wound in such a manner that its lower part lies within the bladder; after inflation of the balloon by means of a syringe the bladder wall is lifted forward and presses closely against the abdominal wall, obliterating the space of Retzius. By means of an aspirator the urine is conducted from the bladder through the stiff-walled tube.

Acute Gonorrhea: Its Prevention and Cure. Youmans (*Jour. Cut. and Gen.-Urin. Dis.*, Aug., 1899), in regard to the prevention of gonorrhea, advises a more thorough sanitary supervision and regulation of prostitution; those found to be infected should be compelled to undergo a prolonged course of treatment, with repeated subsequent observations before being allowed to resume sexual relations. The treatment recommended consists in daily irrigations of permanganate of potash, 1-8,000, following each irrigation by an injection into the urethra of a 2% protargol solution. The penis is bandaged tightly to hold protargol solution in the urethra. The patient is considered cured when, after every test known to the bacteriologist is employed, no gonococci are found in the urethra.

Genito-Urinary Pain. P. C. Fenwick (*Australasian Med. Gaz.*, May 20, 1899) calls attention, in the above article, to the great importance of a knowledge of the nerve supply, and of the nervous routes through which the sensation of pain is conveyed in various diseased conditions of the genito-urinary system. The sympathetic nervous system being no longer regarded as a separate nervous organization, but merely the visceral division of the central nervous system, it follows that any irritation of the sympathetic nerve produced by diseased abdominal viscera will be conveyed to the spinal cord and there reflected to certain spinal nerves, and find expression in that part of the body supplied by that nerve. In this way Fenwick explains (1) the pain in the heel felt at times in cases of urethral inflammation, (2) the pain in the back in congestion of the kidneys and in lithemia; (3) the pain in the penis, testicles and groin in renal calculus; (4) the pain at the end of the penis in vesical calculus, and in disease of the prostate.

Cystitis: Its Cause and Treatment. Howland (*Med. News*, July 15, 1899) gives the following facts as the cause of cystitis: (1) Cystitis is always caused by the presence of micro-organisms, chiefly the colon bacillus, streptococcus pyogenes and staphylococcus pyogenes. (2) The mere presence of bacteria is insufficient to cause cystitis; a further predisposing cause is necessary, such predisposing cause being always congestion. (3) Under favorable conditions, any pathogenic micro-organism may cause cystitis. (4) The entrance of organisms may be through the urethra, through the ureter, and through lymphatics. In the treatment of acute

cystitis, rest in bed is advised, together with the use of opium and belladonna either by the mouth or in the form of suppositories. Occasionally, in severe cases, instillations into the deep urethra of a few drops of a 4% solution of cocain are to be used. No local treatment to the bladder itself is advised in acute cystitis. In the chronic form of the affection, the author uses daily irrigations of the bladder with either salicylic acid, nitrate of silver or bichlorid of mercury. Urotropin is employed internally in 7 gr. doses, as a genito-urinary antiseptic.

GYNECOLOGY.

UNDER THE CHARGE OF

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The Surgical Treatment of Fibromyoma. Schauta (*Internat. Cong. Rep.*) contributes the result of his personal experience, founded on 424 cases of operative treatment of myoma uteri with opening of the peritoneum, in 2,263 peritoneal operations performed by him. His conclusions on the surgical treatment of these neoplasms are as follows: (1) Operative treatment of fibroid tumors is not legitimate except when they are the cause of troubles that cannot be conquered by other means. (2) Vaginal total extirpation should be considered as the safest, and, in the long run, most successful operation. It should be performed in all cases when the tumor does not extend above the level of the umbilicus, and when it can be easily drawn into the small pelvis. (3) For large, not easily movable tumors, wholly or partially intraligamentary, abdominal total extirpation should have the preference. (4) Supravaginal amputation with intraperitoneal treatment of the stump, gradually should be set aside in favor of abdominal total extirpation; although the immediate results of the former are sometimes more favorable, it has been proved that there are more chances for absolute recovery when no part of the cervix has been allowed to remain. (5) In emergency cases, supravaginal amputation with extraperitoneal treatment of the stump affords facility for speedy and absolute extraperitoneal execution, and offers an advantage not to be underrated, in cases of extreme anemia, asphyxia, weakness of the heart, and suppuration or necrosis of the tumor. (6) Vaginal enucleation of broad-based, sub-mucous tumors, either by way of the dilated cervix, or by the vaginal fornix, after anterior or posterior kolpotomy, with or without opening of the peritoneum, should be resorted to only in cases where there are special indications. Myomata being gen-

erally multiple, it would not be likely that the operation would afford durable results, and therefore cannot be considered as less dangerous than the radical operation, with removal of the uterus. (7) Curettage should be looked upon as an uncertain mode of treatment, not wholly free from danger, and should be limited to rare cases of beginning myomatous development. (8) Castration should be strictly objected to on the ground of its not bearing comparison with the radical operations with regard to reliability and immunity from danger. In quite exceptional cases, when it is not possible to perform supravaginal amputation with extraperitoneal treatment of the stump, it may now and then be resorted to. (9) It is not to be thought that the methodical use of forcipressure affords the patient advantages over the use of ligatures, except in so far as they facilitate a speedy operation in atypical cases. In cases of emergency or danger their use is certainly to be justified. (10) The full value of drainage of the supravaginal wound for furthering throughout the chance of asepsis, in abdominal as well as in vaginal total extirpation, should be always kept in mind. (11) The question if removal of the ovaries should be performed, with vaginal or abdominal total extirpation, is not yet decided. Climacteric symptoms (*Ausfall-erscheinungen*) have been observed either way. If the ovaries are removed, these appear immediately; if left behind, after weeks and sometimes months.

On the Relative Value of Antisepsis and Improved Technique for the Actual Results of Operative Gynecology. Bumm (*Internat. Cong. Rep.*) after a year's bacteriological research, made during a great number of operations from beginning to end, of the skin of the hands as well as the operation field, the wound, the instruments, the dressing, and ligature-material, gives the following results: (1) There is no way to remove with certitude all micro-organisms from the hands. The successive use of soap and hot water, of alcohol, and of a solution of lysol or sublimate, for ten minutes each, is not sufficient to sterilize the skin with certainty. For these experiments rigid precautions, as prescribed in Hagler's method, are necessary to obtain satisfactory results. Above all, it is not sufficient to examine only a small part of the hands, but to remove the adhering remainder of the sublimate, and to take into account the shriveling of the skin by the alcohol. (2) The same conclusion is to be drawn with regard to the skin of the rest of the body and especially for the external genitals, the perineum, the vagina, etc. (3) During the course of the operation we find on the instruments and ligatures and in the wound principally the micro-organisms originating in the deeper parts of the epidermis and from the glandular ducts. In 50 great operations, under exact control, none were found entirely free from the presence of micro-organisms. (4) With the "aseptic" method, even when the operation is made in the best conditions and with the greatest precautions, the number of micro-organisms is far higher than that which is found in using the antiseptic method. At the end of the operation the so-called sterile salt solution contains regularly micro-organisms and sometimes in great number. (5) The micro-

organisms of the atmospheric dust are of but small importance in the infection of operation wounds. (6) Difficult as it is to operate without giving access to the micro-organisms, it is still more so to keep them away from the wound and its surroundings for a longer amount of time. It is therefore illusory to think that either asepsis or antiseptics can bring about a sterile condition of the wounds. According to circumstances, there will be in every wound more or less bacteria. In spite of this proved presence of micro-organisms, most wounds heal without suppuration or fever. This result is due to the bactericidal power of the organism.

OBSTETRICS.

UNDER THE CHARGE OF

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Vaginal Douches, Ante-Partum and Post-Partum. Boston (*N. Y. Med. Jour.*, No. 23, p. 816) states that the objection to employing ante-partum douches holds good in a great measure in regard to the use of post-partum douches. The post-partum intrauterine douche, however, may be of use in removing particles of placental tissue and membranes and of stimulating the uterus to contract, thus controlling hemorrhage. After sepsis has developed, it may be of service in removing toxins. The intrauterine douche is unnecessary after the hand has been introduced into the uterus, as it can do no good. The douche does not even attempt to remove bacteria after a uterus has once been infected. This is also true of curettment. The author has made cultures from the gauze removed from the uterus 12 to 24 hours after curettment and always found the same bacteria present as were found before the operation. He summarizes as follows: (1) A profuse leucorrhea during the latter months of pregnancy is no indication for vaginal douching. (2) The chemical reaction of a discharge has but slight effect upon its antiseptic powers. (3) The vaginal secretions of pregnant women rarely, if ever, contain pathogenic germs, except gonococci. (4) Vaginal douches favor the development of cervical gonorrhea and puerperal sepsis. (5) The vaginal secretions may contain streptococci, staphylococci, diplococci, and bacilli, all of which may be non-pathogenic. (6) A discharge from the cervix may show the presence of pathogenic bacteria after all other symptoms of sepsis have disappeared.

Alcohol in Sterilization of the Umbilical Stump. Ahlfeld (*Monats. für Geburts. u. Gynak.*, July, 1899) writes of the utility of alcohol as a dressing for the umbilicus. He first cuts the cord 8 c.m. from the

abdomen and treats it with 3% Kresol soap. After the child is washed, he re-ligates the stump about 2 c.m. from the abdomen. The whole umbilical region is then treated with 96% alcohol and dressed with sterile cotton, fastened with a rolled bandage. The child is not bathed until the cord drops off. Ahlfeld states that he has used this method for many years with perfect results.

Symphysiotomy after the Death of the Fetus. Gaulard (*Soc. d'Obstet., etc.*, 1899, p. 120) records a case of symphysiotomy performed in a double oblique, oval pelvis. In 1893 Queirel, of Marseilles, wrote to Pinard in regard to performing symphysiotomy after the death of the child, and Pinard disapproved of the propriety of such a procedure. Gaulard believes that in a pelvis of this class the operation is justifiable, because of the difficulty encountered in using the basiotribe, symphysiotomy being a much simpler operation. He prefers symphysiotomy to Caesarian section, because it is much more readily performed and because it is more readily accepted by the public and easier for the young practitioner.

Behavior of the Uterine Mucosa after Abortion. Polano (*Zeitsch. f. Geburts. u. Gynak.*, Bd. XLI., No. 1) states that after a complete emptying of a five-months pregnant uterus, the mucosa is regenerated in 8 days. The inter- and intramuscular tissue forms the new stroma, the superficial portion undergoing hyaline degeneration. New glands are formed from solid epithelial processes which dip down into the stroma. When the uterine cavity is curetted regeneration occurs more rapidly than after spontaneous expulsion. Syncytial migratory cells are no longer visible after the eighth day, while only a minimum of decidual tissue remains. In cases of vesicular mole, 8 days after removal no proliferating remains of fetal tissue are found. The regenerated mucosa after mole-formation cannot be distinguished from the normal.

Disinfection of the Hands. Tjaden (*Zeitsch. f. Geburts. u. Gynak.*, Bd. XLI., No. 1) has made an especial study of the best means of disinfecting the hands of midwives, and he has come to the conclusion that mechanical measures are more important than chemical ones. He says that all measures conjoined can but accomplish relative security, therefore it is most important to emphasize the usefulness and the necessity of abdominal palpation as a means to diagnosis instead of the intravaginal touch.

Phlegmasia Alba Dolens. Burns (*Denver Med. Times*, July, 1899) treats this condition in the following manner: As soon as the diagnosis is made he cures the infected area of the birth canal. Three times daily the limb is to be bathed with hot water; the hips are brought to the edge of the bed and the foot placed on a chair while a bowl of hot water is placed beneath the leg, which is wrapped with one thickness of woollen cloth, the water being allowed to drip on the wrapping from a sponge. This is kept up for half an hour, and the water should be as hot as can be endured. After each bathing, the limb is wiped dry, turpentine or camphorated oil applied, and the dressing completed with cotton batting. The bowels must be kept free. When the tenderness subsides cold water and massage are indicated.

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A large amount of space is occupied in this issue of the INTERNATIONAL by the masterly Hunterian Lecture by our distinguished collaborator, Dr. A. Ernest Sansom, of London, on the "Effects of Influenza upon the Heart and Circulation; their Clinical Manifestations and their Treatment." This is so exhaustive, so interesting, and so authoritative an exposition of a very important subject, that no apology is deemed necessary for permitting it to crowd out much other valuable matter, which will appear in subsequent numbers

**Dr. Sansom's
Lecture.**

There has been a wide divergence of opinions as to the percentage of free hydrochloric acid that should under normal conditions be found in the gastric contents at the height of digestion. This is a highly important practical question in the treatment of dyspeptic ails, since it is customary to prescribe somewhat active remedies to correct either a marked excess or deficiency of this essential ingredient of the gastric juice. Naturally, therefore, it must make a decided difference whether the normal proportion of free hydrochloric acid be considered to be from 0.025 to 0.05 or from 0.1 to 0.2 per cent.

**What Constitutes
an Excess of
Hydrochloric
Acid?**

A series of experiments lately carried out by B. K. Rachford and reported in the *American Journal of Physiology* (Vol. II., No. 5) go far toward finally settling this question at the same time that they emphasize strongly the previously known fact that an excess of free acid passing from the stomach into the bowel is liable seriously to derange the intestinal digestion.

Rachford demonstrated that free hydrochloric acid in a 0.1 per cent. solution retards greatly the diastasic action of the pancreatic juice. In several of his experiments this action was almost destroyed by such a solution. These results warrant the inference that a proportion of free hydrochloric acid, amounting to 0.1 per cent. or more is dangerously excessive. And this we should expect on *a priori* grounds. The function of the acid in the gastric juice is, aided by the pepsin, to form chemical compounds with the albuminoids of the food in the stomach. When all these have been saturated toward the end of the digestive period, there is no longer anything for free hydrochloric acid to do except the injurious action of disturbing the alkalinity of the fluids in the duodenum and irritating the intestinal mucous membrane, thus provoking intestinal catarrhs, both directly and through the irritant influence of the undigested food. A slight excess of

acid shows that there has occurred a complete saturation of the albuminoids, and is therefore enough. Such a small excess is easily neutralized in the duodenum by the various alkaline secretions which meet it there.

The contention of many authorities that a proportion of free hydrochloric acid in the stomach amounting to from 0.1 to 0.2 is normal, was based upon experiments in part upon dogs, which are not a criterion for the human race, and upon alleged healthy men who were evidently not healthy. In some of the more recent experiments to determine this point, the subjects were medical students under a high pressure mentally, and living more or less irregular lives because of the unaccustomed conditions to which most of them were subjected away from home in a large city. To test this matter properly in perfectly normal stomachs, one would need to analyze the gastric contents of twenty or thirty young persons in full, vigorous health, whose muscles are being regularly and sufficiently exercised in the open air, persons who eat moderately of a not too stimulating food, eschew the sharper condiments, alcoholic liquors and tobacco, and are subjected to no mental strain or to any unusual nervous or sexual excitement. Then the results would be trustworthy.

No such tests in any considerable number have been made, so far as we know; but Rachford's experiments prove decisively, regardless of what we have been led to consider normal, that 0.1 per cent. of free hydrochloric acid is excessive and liable to prove, as clinical experience often shows, very injuriously so.

Nor is it any answer to this to object that many apparently healthy persons show constantly a higher percentage of free hydrochloric acid. Nature is lavish in her safeguards, and, for a time, a copious secretion of an active bile and pancreatic juice may succeed in neutralizing even a very large excess of acid in the bowel; but there comes a time when these alkaline fluids fall off in quantity and activity, and fail, therefore, to protect longer the intestinal digestion, just as there comes a time when the over-taxed muscles of accommodation in eye-strain give out, and then for the first functional trouble results.

It should be obvious to all that the reading columns of a respectable medical journal are not for sale. The advertising pages are well understood to be open for the publication at a price of any claims or statements within reasonable bounds that may be made by any persons having wares to sell. Advertisers in this way pay certain fixed prices for the control during definite periods of certain amounts of space in which they are privileged to insert whatever representations or arguments they think will prove most convincing to the readers of the journal.

While the great majority of decent advertisements—the only kind that are accepted by the publishers of reputable medical journals—are trustworthy, confirmatory testimony from impartial outsiders is naturally wel-

come. And it does happen now and then that a new remedy or new method of treatment is brought forward which effects such remarkable results that the conscientious physician is impelled, in the interests of suffering humanity, to report his results with it, in an article specially devoted to the subject.

When, however, the results of the trial of new remedies are not sufficiently favorable to evoke spontaneous tributes, the proprietors in many instances nowadays undertake to arrange for them. A physician is found who can be employed for a consideration to write an article containing a series of reports of alleged cases in which the new medicament is usually represented as having produced quite extraordinary and unprecedented results. The best medical journals do not accept such one-sided clinical reports, the *raison d'être* of which is detectable at a glance, but others do, and doubtless, at first, some readers are influenced thereby in the direction desired.

But, in a little while, the trick is discovered. Readers learn that these enthusiastic reports are written by paid advocates, and therefore are to be classed simply as advertisements. In the end, therefore, it must become unprofitable even to the advertisers themselves to encourage such a debasement of medical journalism. Every physician ought to feel it to be a privilege and a duty as well to write frankly and freely for or against every new preparation or instrument which he has tried thoroughly, devoting to it as much space, whether incidentally or otherwise, as its importance demands. But if articles which are transparent advertisements continue with increasing frequency to appear in the reading pages of medical journals among scientific papers, those who respect themselves will hesitate to record favorable experience, even when it is fully warranted, for fear of their motives being questioned.

The foregoing reflections have been suggested by a communication recently received from the representatives of a prominent firm, asking as a condition precedent to sending their advertisement to this journal, that the editor should write an article on their specialty, "to occupy from two to two and a half pages, of such a character as to furnish information of interest to his readers and in no sense appear as advertising, but as a contribution stating the writer's own experience with . . . or his personal knowledge of its value to the medical profession. For such an article, if it met with their approval (as it would be necessary, of course, to submit it to them before insertion), they would authorize us to pay a reasonable price." Then follow these questions:

"Are you willing to prepare such an article, and, if so, what would be your price?"

It is humiliating to have to infer from this letter that there must be medical journals whose editors are willing to enter into such commercial arrangements, including the relegation to advertisers of the duty of passing upon and revising fictitious articles written to order for insertion among legitimate papers or clinical reports.

And the strangest part of it is, that an advertiser should consider as worth buying any medical journal edited in such a manner.

EDITORIAL MENTION.

IN Germany the use of beer and wine as beverages is possibly more general among all classes of the people and in both sexes than in any other country. Beer may be considered as the national drink, and even the young children are often taught to take it with their meals. Yet, being a most philosophic people, the Germans are beginning to learn that such a wholesale consumption of alcohol is capable of doing serious harm. When in Germany a year ago, the writer saw prominently displayed in the waiting-room of a distinguished physician pamphlets urging strongly the harmfulness of giving alcoholic beverages to children. And now we notice that during the time of the recent annual meeting in Munich of the German Association of Scientists and Physicians, there was held in the same city in the assembly-room of the division for psychiatry, the fourth annual meeting of the "Society of Abstinent Physicians." On this occasion the president, Prof. Dr. Kraepelin, of Heidelberg, delivered an address on "The Influence of Alcohol on Man." This address bristled with points which would have delighted the most intense of our American temperance reformers, showing, among other things, that under the continued use of alcohol "mental ability steadily sinks." On the same occasion Prof. Bunge, of Basel, brought forward statistics tending to prove that the progressive loss during the past five hundred years of the ability of women to nurse their children, is in part due to the effect of alcohol, the injurious results having become hereditary. Extensive observation by him showed that of the women who could nurse their children, 68% were abstainers and none were drunkards, while of the other class only 35% were abstainers, 58% moderate drinkers and 6% hard drinkers.

PROF. GRASSI, of Rome, discussed the cause of malaria at the meeting of the German Association of Scientists and Physicians, held in September. He maintained that Koch was wrong in holding that the malarial parasite of man passes through identical stages of development with Ross's bird parasite; also that Koch erred in believing that the ordinary mosquito is a carrier of the disease. That this view of Koch's was erroneous is proved by many well-known facts. For instance, mosquitoes were very prevalent in Atlantic City in its earlier days, and occasionally still, in the latter part of unusually moist summers may be troublesome there for a few days at a time during a land breeze; and yet few climatic facts are better attested than that the place has, for twenty years past at least, been entirely free from the malarial diseases. There are certain species of the mosquito, not all of them, which are capable of infecting their victims with the malarial parasite.

BOOK-REVIEWS.

PROGRESSIVE MEDICINE—VOLUME III. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 440 pages, 11 illustrations. Philadelphia and New York, Lea Brothers & Co.

This volume shows no falling off in the character of its contents. It includes papers upon the following subjects: "Diseases of the Thorax and Its Viscera, including the Heart, Lungs and Blood Vessels," by William Ewart; "Diseases of the Skin," by Henry W. Stelwagon; "Diseases of the Nervous System," by William G. Spiller, and "Obstetrics," by Richard C. Norris. All of these are carefully prepared compilations of the best things in recent medical literature bearing upon the several subjects. Ewart's article is most thorough and exhaustive, covering the whole ground of etiology, diagnosis and treatment in a most comprehensive way.

A COMPEND OF GYNECOLOGY. By Wm. H. Wells, M.D., Adjunct Professor of Obstetrics and Diseases of Infancy in the Philadelphia Polyclinic, etc. With illustrations. Philadelphia, P. Blakiston's Son & Co., 1012 Walnut Street. 1899. 80 cents.

Gynecology is one of the specialties which most general practitioners deem it necessary to learn a good deal about. There are few who do not feel themselves competent to use the speculum and intrauterine sound, even when they draw the line at the stomach tube, notwithstanding that uterine displacements are generally secondary to gastropnoxis, and catarrh of the womb much less injurious in its results upon the general health than catarrh of the stomach. Hence such books as this should be popular, since they contain in brief form and plain language most of the essentials of gynecology. The second edition of the compend before us, one of the best of its class, contains some noteworthy additions, and the index prepared by Dr. L. F. Appleman is particularly complete.

HANDBOOK OF OPTICS FOR STUDENTS OF OPHTHALMOLOGY. By William Marwood Suter, B.A., M.D., Professor of Ophthalmology, National University, Washington, D.C. New York, The Macmillan Co. 1899. \$1.

The author has endeavored to give in this small book a resume of that part of the science of optics that pertains directly to ophthalmology. The demonstrations, which may at first glance seem very formidable to the medical student who aspires to proficiency in ophthalmology, require no especial knowledge of mathematics beyond that of simple algebraic equations and the elementary truths of geometry. For those who may not be familiar with trigonometrical ratios, a brief synopsis has been furnished in an appendix. A uniform notation,

with which the student will easily become familiar, has been preserved throughout the book; by this means those who may be indisposed to follow the algebraic processes in detail will be aided in understanding the methods of demonstration. While much of the matter given may be found in the standard text-books on ophthalmology and the majority of it is of little practical use to the oculist, yet there are found all through the text lucid explanations of several important and much neglected topics, such as the different dioptric states of aphakic eyes in emmetropia, hyperopia, and myopia. It would be well for some of the surgeons who are now in the habit of removing the crystalline lens in high myopia to familiarize themselves with the very satisfactory explanation of the remarkable optical results of the operation in cases of from 20-24 diopters of axial myopia (pages 100-105). Other topics of practical interest not commonly explained are "The Effect of Lenses upon the Size of Retinal Images" (p. 109), "The Twisting Property of Cylindrical Lenses" (p. 138), and "Oblique Refraction through Lenses" (p. 163).

The book is well-written and the letter-press is excellent. Although it is not a necessity to students of ophthalmology, it will be of use to those who desire to extend their knowledge of the mathematical and physical part of their specialty.

A COMPEND OF THE DISEASES OF THE EYE AND REFRACTION; INCLUDING TREATMENT AND SURGERY. By George M. Gould, A.M., M.D., formerly Ophthalmologist to the Philadelphia Hospital, etc., and Walter L. Pyle, A.M., M.D., Assistant Surgeon to Wills Eye Hospital, Philadelphia, etc. Second edition, revised and enlarged. 109 illustrations. Philadelphia, P. Blakiston's Son & Co., 1012 Walnut Street. 1899. 80 cents.

This admirable compend has been reset in larger type and otherwise considerably improved since the appearance of the first edition. The section on "Local Ocular Therapeutics" has been increased to include all the recent mydriatics and other late additions to the remedies employed locally in and about the eyes. It is a very useful little book, which not only students but general practitioners should have at hand.

THE TREATMENT OF PELVIC INFLAMMATIONS THROUGH THE VAGINA. By William R. Pryor, M.D., Professor of Gynecology, New York Polyclinic; Consulting Surgeon, City (Charity) Hospital; Visiting Surgeon, St. Elizabeth's Hospital, New York City. 8vo, pages 248. Philadelphia, W. B. Saunders.

While the contention as to the relative merits of the abdominal or the pelvic route for the operative relief of utero-ovarian disease is by no means at an end, there is a growing appreciation of the fact that those who practice either method exclusively do so to the serious detriment of certain of their patients. Although the merits of the vaginal route have been depreciated upon the one hand and exaggerated upon the other, it is now evident that, for a considerable proportion of the more acute and septic inflammation in the pelvis, this method is life saving. Even if it be proved that the procedure is not ultimately curative; if it offer an escape from an impending fatal issue it is not to be disdained. We have in this little book a very explicit and practical

description of the procedure successfully employed by the author in the treatment of pelvic inflammation. The tone of the work is aggressively surgical, and if the author's diction lacks elegance his descriptions are at least expressed with clearness and force. The operation given especial prominence involves an incision through the posterior cul-de-sac. Dr. Pryor considers this incision to be free from danger and strongly advocates it for purposes of pelvic exploration and drainage, and for conservative and radical operations upon the uterine appendages. A method of vaginal hysterectomy with clamps is used for many of the conditions for which the operation through the cul-de-sac is insufficient. We believe the work has a distinct value in emphasizing a branch of gynecology that has not been given sufficient attention in the general text book. Although exception may be taken to some of the author's views, there is much to commend, and the book may be read with profit by all who practice gynecology. The work is well illustrated and well printed.

GENERAL PHYSIOLOGY: AN OUTLINE OF THE SCIENCE OF LIFE. By Max Verworn, M.D., Ph.D., A.O., Professor of Physiology in the Medical Faculty of the University of Jena. Translated from the Second German Edition and Edited by Frederic S. Lee, Ph.D., Adjunct Professor of Physiology in Columbia University. New York, The Macmillan Co. \$4.

This book is one of the important landmarks of the rapid progress of our science. It represents a new era in our scientific advancement on the lines of inductive investigation. As soon as a particular science becomes broad enough, differentiation takes place, specialism arises, and each specialty is worked out independently until a sufficient number of facts is accumulated in each particular branch to permit of a general classification, and by induction a system of general principles is again established. It is this ever-recurring cycle that led up to general physiology. Just as special anatomy finally developed into biology, special physiology, the physiology of plants, animals, etc., culminated in general physiology. This transition from the part to the whole was made possible by our discovery of the unit of the living organism—the cell. The cell is the prototype of the organism, which, after all, is only a compound of cells differing from each other in their special but not general functions. The cell is the seat of physiologic as well as pathologic activities. It is the acceptance of this cellular unit as the basis of organic life that constitutes the stronghold of scientific pathology. The recognition of the cellular theory of disease so vigorously propagated by Virchow wrought a great change in the science of medicine. Infectious diseases owe their origin to bacteria which are unicellular micro-organisms, while phagocytosis is one of the manifestations of the cellular life of the leucocytes. The importance of these latest discoveries is appreciated by all. In order that the abnormal may be understood, the normal should first be known. The study of general physiology should, therefore, precede the study of general pathology, and the scientific physician will gladly avail himself of the opportunity to become familiar with the important subject of general physiology so masterfully epitomized in this book.

In the six chapters, covering about 600 pages, the author discusses the sub-

ject in its entirety. Chapter I. is devoted to the aims and methods of physiological research. In Chapter II. living substance is discussed, including a treatise on the composition of the cell and the differentiation between living and non-living matter. Elementary vital phenomena are considered in Chapter III. Here the phenomena of metabolism, the phenomena of form changes and transformation of energy are ably treated. In Chapter IV. the general conditions of life and the various theories concerning the origin of life are fully represented. Stimuli and their action form the contents of the next chapter, while the description of the mechanism of life, including a discussion of the vital process, the mechanics of cell life and the constitutional relations of the cell-community, complete this able treatise. An extensive bibliography and numerous illustrations are additional very desirable features. The entire book bears the stamp of thoroughness so characteristic of the German scholar. The translator deserves double credit—for bringing this book within the reach of the English-speaking scientist and for doing the work of translation so well. The publishers also are entitled to commendation for the mechanical appearance of the volume.

SIXTEENTH REPORT OF THE STATE BOARD OF HEALTH AND VITAL STATISTICS OF MINNESOTA. St. Paul, Minn. 1898.

This report presents a summary of the work performed during the period under consideration. Besides the statistical reports, it deals elaborately with the creditable original research which has been conducted in the various laboratories under the control of the board.

Much of the work reported is necessarily the routine work which modern scientific preventive medicine and sanitation has made so essential to the health of the community; work that can be conducted only by well-organized and well-equipped laboratories under State control and patronage. This report is a convincing illustration of the value of such laboratories to the State and people, and shows their value, not alone for prosecuting the routine work that is so essential, but by fostering original research, work which has more than a local value, and aids the development of scientific medicine and its application to medicine everywhere.

This is well illustrated by the exhaustive papers on the serum diagnosis of typhoid fever, which point out the value of the method and illustrate the value of such laboratories to the physicians of the State, while detailing the methods that ought to be employed in obtaining and forwarding specimens for diagnosis. The value of laboratory work is here again illustrated by the results which followed the collection of the large number of cases reported and the statistics secured.

The same is true of diphtheria, and many of the contagious diseases that are found among the domestic animals. In all these, and the many other departments, the value of this work and of such reports is manifest. As is evident in many such reports, these labors have been carried out under difficulties, but with an apparent education of the public mind, which, when it has progressed, will result in an enthusiastic financial support.